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A Unified Approach to the Basic Medical Sciences at Harvard.....*Manfred L. Karnovsky*

Blood Red Tape.....*Max S. Marshall*

Observations on the Profile of Continuation Medical Education.....*William Frederick Norwood*

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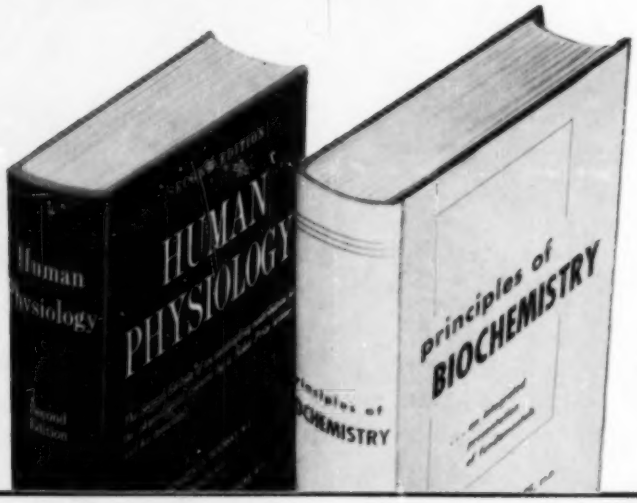

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Table of Contents

VOL. 30 January 1955 No. 1

ARTICLES

A Unified Approach to the Basic Medical Sciences at Harvard
—*Manfred L. Karnovsky* 15

Blood Red Tape
—*Max S. Marshall* 25

Observations on the Profile of Continuation Medical Education
—*William Frederick Norwood* 31

Better Education Through the Western Commission for Higher Education
—*William C. Jones* 40

Reports of Allied Organizations 43

EDITORIALS AND COMMENTS

Medical Schools in the Practice of Medicine 46

Conferences on Medical Education 48

NEWS DIGEST 49

College Briefs 51

AUDIOVISUAL NEWS 57

BOOK REVIEWS 63

ABSTRACTS AND EXCERPTS 66

THE PERSONNEL EXCHANGE 69

Association Officers, Staff, Committees 7

Calendar of Meetings 10

Index to Advertisers 10

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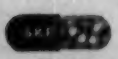

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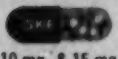

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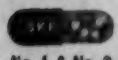

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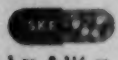

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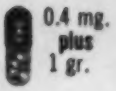

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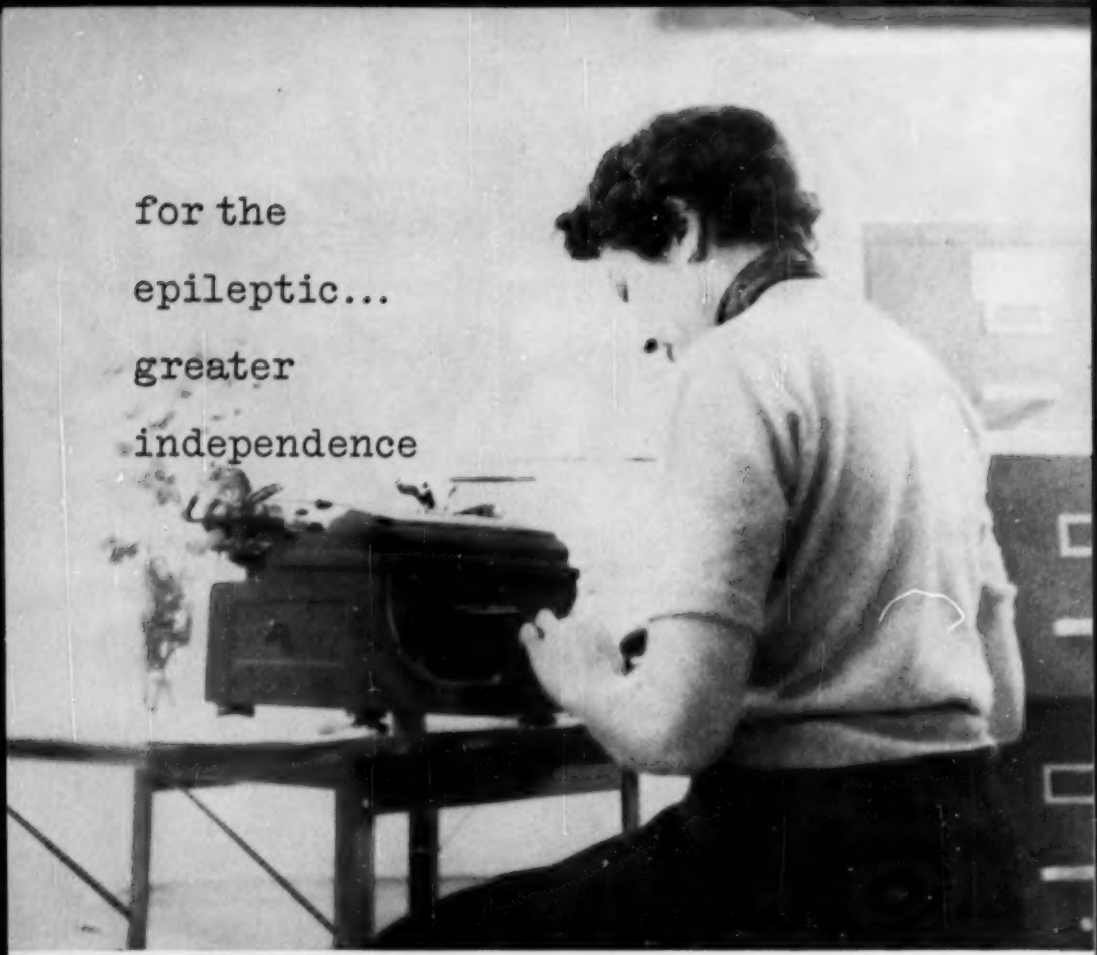

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ASSOCIATION OF AMERICAN MEDICAL COLLEGES 66th Annual Meeting, October 24-26; Swampscott, Mass. (New Ocean House).

Teaching Institute on Anatomy and Anthropology—October 19-22; Swampscott, Mass. (New Ocean House). (Attendance by invitation only).

American Academy of Orthopaedic Surgeons—January 29-February 3; Hotel Statler, Los Angeles.

American College Public Relations Association—June 30, July 1 and 2; Chicago.

American Medical Association, Annual Meeting—June 6-10; Atlantic City, N. J.

American Psychosomatic Society—May 4 and 5; Claridge Hotel, Atlantic City, N. J.

Annual Congress on Industrial Health—January 24-26; Hotel Shoreham, Washington, D. C.

Annual Congress on Medical Education and Licensure—February 5-8; Palmer House, Chicago.

British Medical Association, Representative Meeting—June 1-4; London, England.

Congress of the International Diabetes Federation—July 4-8; Cambridge, England.

Congress of the International Society of Urologists—April; Athens, Greece.

European Congress on Rheumatism—June 13-17; Scheveningen, The Hague, Netherlands.

International Anatomical Congress—July 25-30; Paris, France.

International Congress of Biochemistry—August 1-6; Brussels, Belgium.

International Congress of Comparative Pathology—May 26-31; Lausanne, Switzerland.

International Congress of Plastic Surgery—August 1-4; Stockholm, Sweden.

International Congress of Urology—April 10-18; Athens, Greece.

International Surgical Congress—May 23-26; Geneva, Switzerland.

Inter-American Congress of Radiology—April 24-29; Shoreham Hotel, Washington, D. C.

Inter-American Session, American College of Surgeons—January 11-14; Lima, Peru.

Japan Medical Congress—April 1-5; Kyoto, Japan.

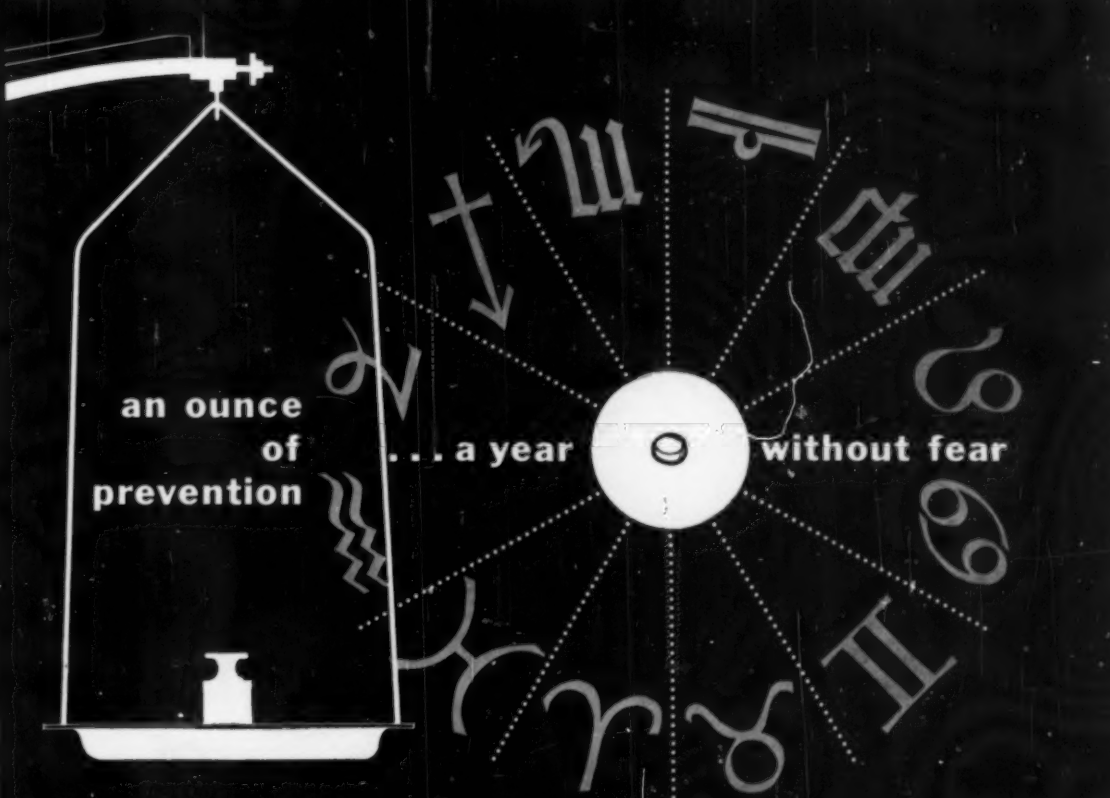
Latin-American Congress of Physical Medicine—February 14-19; Lima, Peru.

Middle East Medical Assembly—April 22-24; American University of Beirut, Lebanon.

World Medical Association—September 20-26; Vienna, Austria.

Index to Advertisers

Appleton-Century-Crofts, Inc.	3
Assn. of Am. Med. Coll.	Third Cover
Borchardt Malt Extract Co.	13
Cambridge Instrument Co., Inc.	70
Lippincott, J. B. and Co.	Back Cover
McGraw-Hill Book Co., Inc., Blakiston Div.	Inside Front Cover
Macmillan Co.	14
Mosby, C. V., Co.	67
National Dairy Council	9
Parke, Davis and Co.	6
W. B. Saunders Co.	Front Cover, 1
Smith, Kline and French Laboratories	4, 5
Taylor Instrument Co.	62
Warner-Chilcott Laboratories	11
Winthrop-Stearns Inc.	12
Woodward Medical Personnel Bureau	69
Year Book Publishers, Inc.	64



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1. Russek, H. I.; Urbach, K. F.; Doerner, A. A., and Zohman, B. L.: J.A.M.A. *153*:207 (Sept. 19) 1953. 2. Winsor, T., and Humphreys, P.: Angiology *3*:1 (Feb.) 1952. 3. Plotz, M.: New York State J. Med. *52*:2012 (Aug. 15) 1952.

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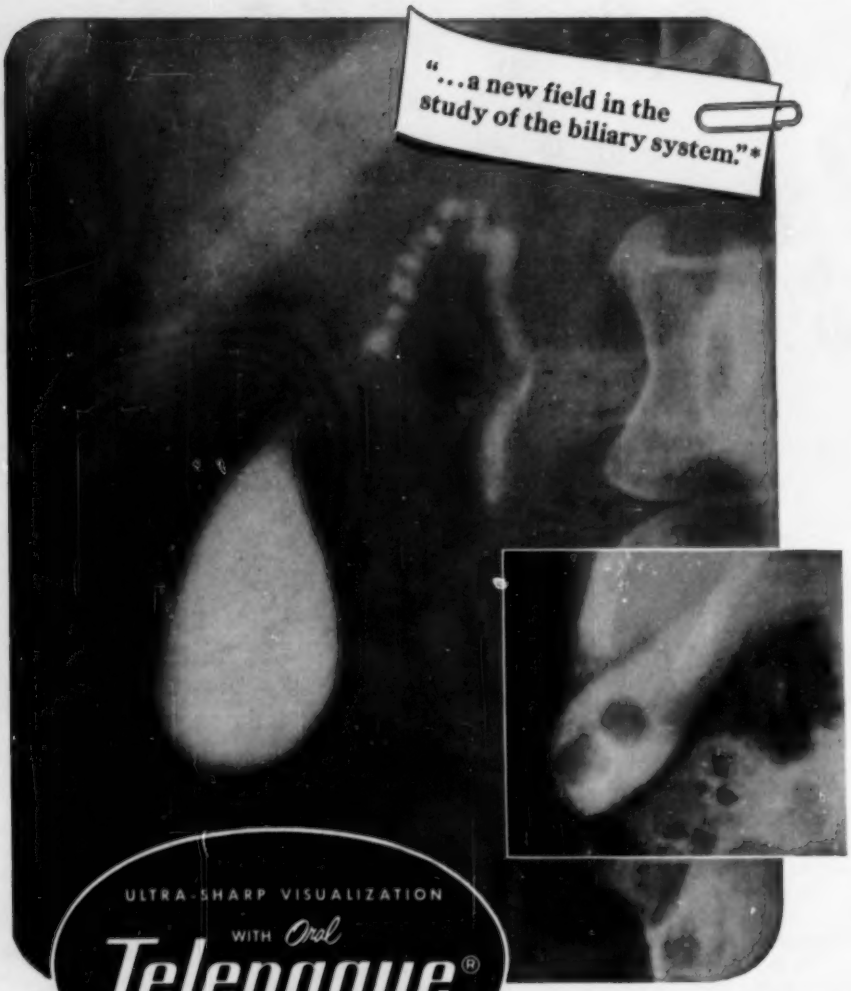

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* Shahadi, W.H. *Am. Jour. Roentgenol.*, 68:360, Sept., 1952

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1. Cass, L. J. and Frederik, W. S.: Malt Soup Extract as a Bowel Content Modifier in Geriatric Constipation, Journal-Lancet, 73:414 (Oct.) 1953.

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A Unified Approach to the Basic Medical Sciences at Harvard

MANFRED L. KARNOVSKY

IN RECENT YEARS there has been an increasing tendency to examine critically the conventional preclinical science curriculum in American medical schools. The reappraisal has been instigated for a number of reasons, chiefly perhaps by a growing feeling that the rapid progress of knowledge in the natural sciences is rendering our curricula unwieldy.

This situation has resulted from the constant addition of fresh topics to our programs without achieving economies of time and effort by the extensive integration of material conventionally taught in the different departments. The present great interest in the methods of teaching in medical schools is exemplified by the Teaching Institutes that have been sponsored recently by the Association of American Medical Colleges and by the efforts that are being made in various schools to explore the possibilities of a unified approach to the teaching of the basic medical sciences.

These matters have been arrestingly discussed by Dean George Packer Berry of the Harvard Medical School in the Journal of MEDICAL EDUCATION.[1] In his discussion, Dean Berry has briefly described, *inter alia*, the background, nature and purposes of an experimental course, embracing all the basic medical sciences, now being conducted at Harvard. This paper essays to expand on his description, and to present the major aspects of the venture in greater detail. Descriptions of the Harvard experiment, from somewhat different points of view, have also been given by Prof. Eric Ball and by Dr. D. S. Riggs.[2, 3]

Dr. Karnovsky is assistant professor of biological chemistry at Harvard Medical School.

The Background

At the Harvard Medical School, as at many others, it has been the practice to offer work leading to the Ph.D. degree in each of the basic medical sciences—anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology. It has been usual for the graduate students to take their coursework in their selected major field in company with medical students. Additional breadth and background have been achieved through other course offerings available at the medical school or elsewhere at Harvard. Two of these subjects have been designated as "collaterals" by the candidate. At the conclusion of the period of formal coursework, each student has taken a "preliminary examination" in his major and collateral fields and, thereafter, has devoted himself to full-time research on his chosen thesis topic. Through attendance at seminars and the period of research under the tutelage of a member of the faculty, the scientific edu-

cation of the candidate has been rounded off.

The system outlined above has many advantages and several serious drawbacks. One of the latter has seemed to members of the faculty to be the early decision the student must make as to his final field of concentration—at a time, perhaps, when his knowledge of the areas usually encompassed by the various disciplines is least well developed. A further problem has been, in many cases, the fact that the development by some students of a sense of integration of the material presented in individual courses was extremely slow.

With these and other considerations (local and general) regarding both the training of graduate students and the preclinical education of medical students in mind, the several basic science departments at the medical school, through their "corporate body," the division of medical sciences, embarked on a program of planning for a somewhat different system.

The division of medical sciences serves as the clearing house through which the individual departments operate their facilities for study toward the A.M. and Ph.D. degrees. The faculty members of all the preclinical departments of the medical school are the members of the division. Since the division was established in the Faculty of Arts and Sciences at Harvard, access is provided to the research and teaching facilities of the medical school and affiliated hospitals, as well as to other departments of the university such as chemistry, biology and physics. As an instrument for the establishment of an integrated program, it is therefore uniquely forged.

The plans of the division culminated after three years in the establishment of a new course, Medical Sciences 20lab, in the fall of 1952. It should be emphasized that this course is the cooperative enterprise of the several departments and originated in these departments.

Medical Sciences 20lab replaces one complete year of formal coursework. After completing it, a student normally takes only such formal courses as are deemed necessary by his research supervisor. The course is, however, elective; that is, a student may commence his studies for the Ph.D. degree by taking either the old or the new program. The official outline of the course, as presented in the most recent "Register of Harvard University,"[4] follows:

Medical Sciences 20lab. Fundamentals of the Medical Sciences. Four full courses (fall and spring terms). (The following instructors have been responsible for the teaching during 1952-53 and 1953-54: Assistant Professors Deane, Gurd, Karnovsky, Pappenheimer, Riggs, Suter: Doctors Dews, Gasteiger, Kulka, Majno, Richards.) Lectures, conferences and laboratory work Monday through Saturday noon. Limited to 20 students.

Prerequisites: Introductory biology, physics and mathematics, general and organic chemistry.

Medical Sciences 20lab is a new course designed to introduce the student to the literature, experimental methods and fundamental principles associated with each of the basic medical sciences. The establishment of this course represents a new departure in the training of candidates for the Ph.D. degree within the division. Studies will center around the functional and morphological characteristics of cells, organs and organ systems. Each topic selected for study will

be approached from the various points of view represented by the different sciences. For example, studies on bacteria will include not only morphological and pathological aspects, but also the biochemistry of bacterial metabolism and the pharmacology of interactions between drugs and bacteria; studies on the kidney will include the comparative anatomy, the cytology and histochemistry of the nephron, the biochemistry of renal tubular transport systems, the biophysical aspects of urine formation and the mode of action of pharmacological agents on the kidney.

The course will be limited in scope, in the sense that it will not cover all of the topics conventionally assigned to each of the participating sciences. However, the subject matter will be treated in an advanced fashion and from a research point of view. The organization of the laboratory work is such as to allow time and facilities for experimentation using the varied research techniques and instruments of the different fields.

A special laboratory has been equipped in Building D2 to permit the integrated study required under this plan. The fact that a group of students, planning to do their research in several different fields, will have the opportunity of working together for an academic year in this "home laboratory" is considered a most important feature of the course.

Medical Sciences 20lab will ordinarily constitute the entire programs of study for first-year graduate students in the division. After completion of the course, the student may enter any one of the special fields to carry out his or her more advanced studies and thesis work. Indeed, it is likely that the first-year student will choose a final field of concentration within the division on the basis of experience in this course. With the approval of the department of the major subject and of the program and admission committee, honor grades in Medical Sciences 20lab may be presented to the division instead of one or both collateral course and/or the divisional preliminary examination which are ordinarily required of Ph.D. students in the division of medical sciences.

It is interesting to note that although this description was written before the course was run for the first time, the members of the present staff, with two years of experience behind them, regard it as being entirely applicable.

The objective of the present article will be to describe the implementation of this program, its special features (both physical and curricular) and to appraise its success in the first two years.

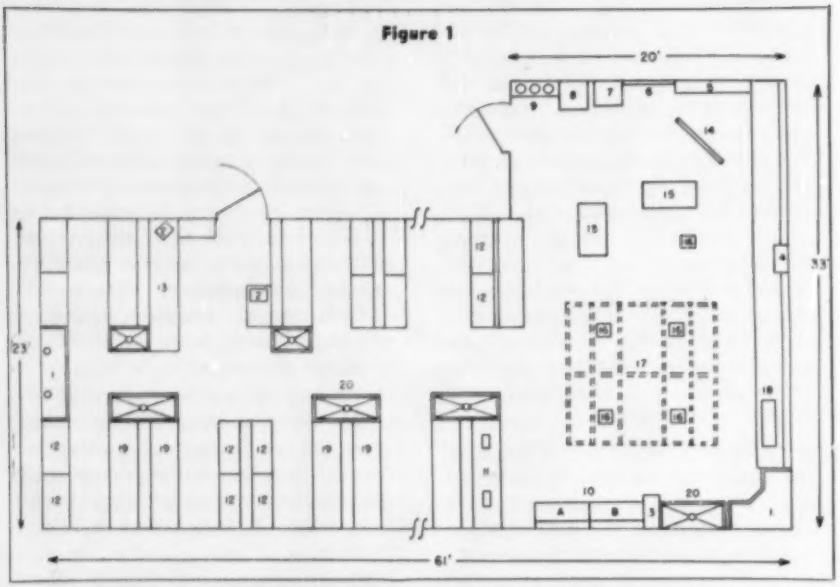
The Staff

The staff teaching Medical Sciences 20lab consists of instructors drawn from each of the basic preclinical departments. These instructors discharge the main responsibility for teaching, but various members of the different departments have participated by giving lectures and demonstrations. The representatives of the departments in the main, have been relieved of other teaching duties in order to be free to devote their time and efforts to Medical Sciences 20lab.

The "Home Laboratory"

The main physical center of the course is a specially designed laboratory (Figure 1). This laboratory was

Figure 1



THE LABORATORY for Medical Sciences 201ab is shown above. The general layout is indicated as follows: 1, hoods; 2, drying and embedding ovens; 3, constant temperature bath for enzyme reactions, etc.; 4, shelf of electronic equipment used mainly in physiological experiments (e.g.), pulse generator, voltage regulator, etc.); 5, carpentry and metalworking tools; 6, projection screen; 7, refrigerated centrifuge with high-speed head; 8, refrigerator; 9, gas tank storage; 10, library shelf: (A) permanent collection of monographs and texts; (B) current reading (reprints, journals, special articles); 11, analytical balances; 12, microscope bench and writing desk combination; 13, area for histological work; 14, movable blackboard; 15, two of eight movable tables, which may be used for conferences, etc., or for physiological experiments in conjunction with special operating tops; 16, utilities in floor wells (gas, compressed air, AC, DC, synchronized pulse; connected to 4); 17, overhanging frame (dotted line) for support of tubes, bottles, etc. in physiological experiments; 18, spectrophotometry equipment; 19, chemical benches; 20, sinks. As indicated by the interruptions in the wall lines, several of the chemical bench and desk units have been omitted from the diagram.

built to accommodate 20 students, each of whom is allotted a chemical bench and a combination writing desk and microscope table, with a bookshelf. The open area of the room is designed for use in experiments requiring heavy equipment for a limited period—for example, Warburg machines, respiration equipment for physiological experiments, electrocardiograms, etc. Facilities such as gas, alternating and direct current are lodged in floor-wells, and special tables onto which small operating tops fit may be moved into place whenever required. Samples, such as incubation media and urines and bloods obtained during experiments, are analyzed directly at the chemical benches. Conferences are held at frequent intervals, the tables being moved into any desired formation according to the type of discussion. A small permanent library of about 50 texts and monographs is maintained in the laboratory for immediate reference, and a further bookshelf is used for "current reading"—reprints, reviews and journals covering lecture and laboratory material under consideration at any particular time.

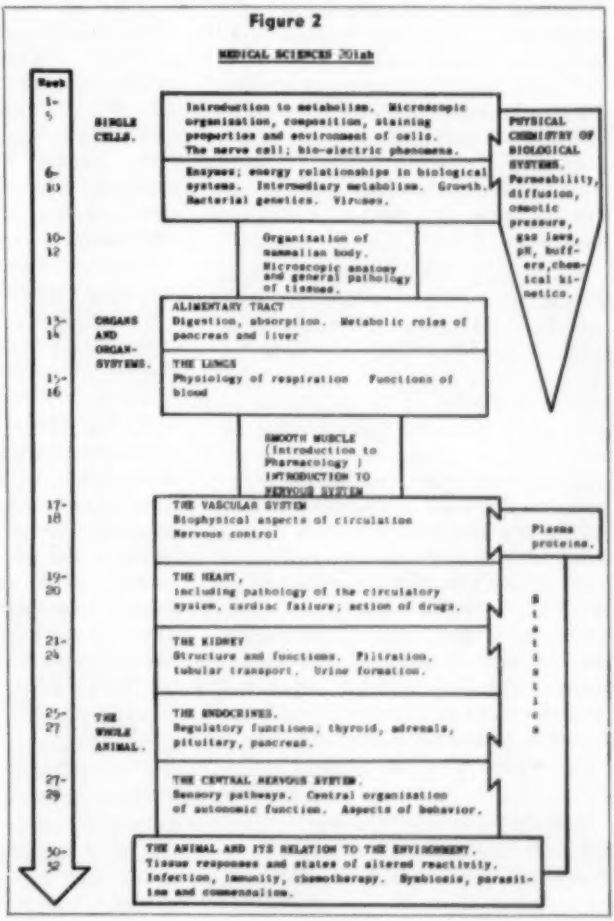
The concept of the "home labora-

tory" as an attractive and efficient focus of the work of the course has been thoroughly vindicated. The students have considerable pride in their surroundings and maintain the laboratory extremely well. Further, it has been found that at almost any time, day or night, groups of students read and study in the laboratory and hold informal discussions. Since the major interests and scientific backgrounds of individual students vary widely, this exchange of ideas is of inestimable value. The staff has come to value very highly the teaching of student by student in these unscheduled and almost continuous sessions.

The Curriculum

An outline of the program of lectures and laboratory sessions is presented in Figure 2. This representation suffers greatly from the disabilities usually attendant upon such a condensation. The elimination of detail makes it possible to obtain merely a rough idea of the actual course

Figure 2


MEDICAL SCIENCES 201ab
Week
1-5
6-10
10-12
13-14
15-16
17-18
19-20
21-24
25-27
27-29
30-32
SINGLE CELLS.
ORGANS AND ORGAN-SYSTEMS.
THE WHOLE ANIMAL.
Introduction to metabolism. Microscopic organization, composition, staining properties and environment of cells. The nerve cell; bio-electric phenomena.
Enzymes; energy relationships in biological systems. Intermediary metabolism. Growth. Bacterial genetics. Viruses.
Organization of mammalian body. Microscopic anatomy and general pathology of tissues.
ALIMENTARY TRACT
Digestion, absorption. Metabolic roles of pancreas and liver
THE LUNGS
Physiology of respiration Functions of blood
SMOOTH MUSCLE (Introduction to Pharmacology)
INTRODUCTION TO NERVOUS SYSTEM
THE VASCULAR SYSTEM
Biophysical aspects of circulation
Nervous control
THE HEART,
including pathology of the circulatory system, cardiac failure; action of drugs.
THE KIDNEY
Structure and functions. Filtration, tubular transport. Urine formation.
THE ENDOCRINES.
Regulatory functions; thyroid, adrenals, pituitary, pancreas.
THE CENTRAL NERVOUS SYSTEM.
Sensory pathways. Central organization of autonomic function. Aspects of behavior.
THE ANIMAL AND ITS RELATION TO THE ENVIRONMENT.
Tissue responses and states of altered reactivity. Infection, immunity, chemotherapy. Symbiosis, parasitism and commensalism.
PHYSICAL CHEMISTRY OF BIOLOGICAL SYSTEMS.
Permeability, diffusion, osmotic pressure, gas laws, pH, buffers, chemical kinetics.
Plasma proteins.
Stimulation

An outline of the curriculum in Medical Sciences 201ab is shown in the illustration at the right.

and the scheme conveys nothing of its spirit. More detailed information on the material presented and the manner of its presentation will appear in the text.

It may be seen from the outline that the course proceeds from a treatment of the physical and chemical composition and properties of living matter to the nature and abilities of cells, the organization of multicellular units and organ systems and, finally, to an extended discussion of the whole animal and its relationship to the environment. There are two areas which might be regarded as "bridge" sections—one in passing from single cells to organs, and one introduced to pave the way for an understanding of pharmacological problems and to effect a general presentation of the nervous system. Both these topics are later expanded upon and woven into other sections.

At the beginning of the course, a section is devoted to the physical chemistry of biological systems. The students become acutely aware of the need for knowledge in this area during the first week of the course, when they carry on some general laboratory studies on cellular respiration and metabolism and find that the gas laws, for instance, are needed for the calculation and interpretation of results, and that the composition, pH and buffering capacity of the medium in which the cells under study operate are of cardinal importance. As the main stream of the course flows on, further physico-chemical principles of importance are discussed and the students work out numerous examples culled from the biological literature.

Each day begins with a lecture lasting from one to one and a half hours. There is only one lecture per day and, on occasion, there is also a tutorial session on physical chemistry, statistics, or some topic not in the main stream of lecture material. Cohesion of the various topics taken up is greatly facilitated by the half-hour discussion periods that follow each lecture. Since all members of the staff attend the lectures and laboratory conferences, these discussions range widely in content. For example, a lecture on the nerve cell and bio-electric phenomena was followed by a spirited discussion, part of which concerned the properties of lipide monolayers, and the discussion period following a lecture on the regulation of body temperature concerned changes in the composition of the body constituents (particularly fats) of hibernating animals. Apart from such discussions, which expand freely on the lecture material, the students are able to clear up any points about which they may be uncertain and members of the staff may add any further information considered germane. The group often finds these discussions genuinely exciting—they have proved to be a true stimulus to the development of a broad perspective and a fresh approach.

The philosophy behind the selection of material in the course has been, wherever possible, the thorough presentation, as models, of selected examples. Reading, and particularly reading of the original literature, is constantly stressed. From the outset students are encouraged to study classic papers brought to their attention on daily lecture-outline sheets.

Work in the laboratory has been designed to bring the student into direct contact with the material of the lectures. Students spend two or three days per week in the laboratory. The work has arbitrarily been divided into two categories, known locally as the "Type A" and "Type B" ex-

periments. The latter are blocks of work usually lasting not more than two weeks and consisting of well-prepared exercises designed to illustrate certain points effectively and economically with respect to time. A number of techniques are taught also, which serve as an important background for the "Type A" experiments. For example, in a section on the isolation and identification of cellular constituents, students undertook qualitative and quantitative chemical work on carbohydrates, proteins, lipides and nucleic acids isolated from fresh tissue, and also made histological preparations on which they performed relevant histochemical tests. In later sections, they were able to use, and extend, what they had learned.

The "Type A" experiments are blocks of work lasting from three to four weeks, and are conducted as follows:

At first the whole class gains experience in the basic operations (e.g., operating and physiological techniques; essential chemical analytical methods or histological techniques). The class then splits into groups, optimally of four members, to work on several different aspects of the general topic under study. Each team works at its own pace, and adequate time is available for a good check of literature. At the conclusion of each block of work, a conference is held at which the students present their findings, which are thoroughly discussed in relation to the literature. Through these conferences and by virtue of the small size of the class, the members of the class become conversant with everything that is going on around them in the laboratory. Three examples of such "Type A" experiments follow:

I. Bacterial metabolism.

Student Groups I and II. *Pathways of anaerobic glucose dissimilation* (using *Aerobacter aerogenes* and yeast cells). Influence of inhibitors; determination of lactic acid, volatile acids, ethanol, etc., formed.

Student Group III. *Production and selection of nutritionally deficient mutants* (of *E. coli* and *A. aerogenes*). The former organism was used for the selection of mutants requiring various amino acids; the latter for mutants having need of purines and pyrimidines and their ribosides and ribotides. Ultraviolet irradiation was used for the production, and penicillin techniques for the isolation, of mutants.

Student Group IV. *Adaptive Enzymes.* Adaptation to various inositol derivatives was studied.

II. The Kidney. Cats were used as the experimental animal.

Student Groups I and II. *Molecular sieving of dextrans through glomerular membranes.* Dextran fractions of different molecular size were used.

Student Group III. *Mercurial diuretics.*

Student Group IV. *Glucose transfer and osmotic diuresis.*

III. Endocrines.

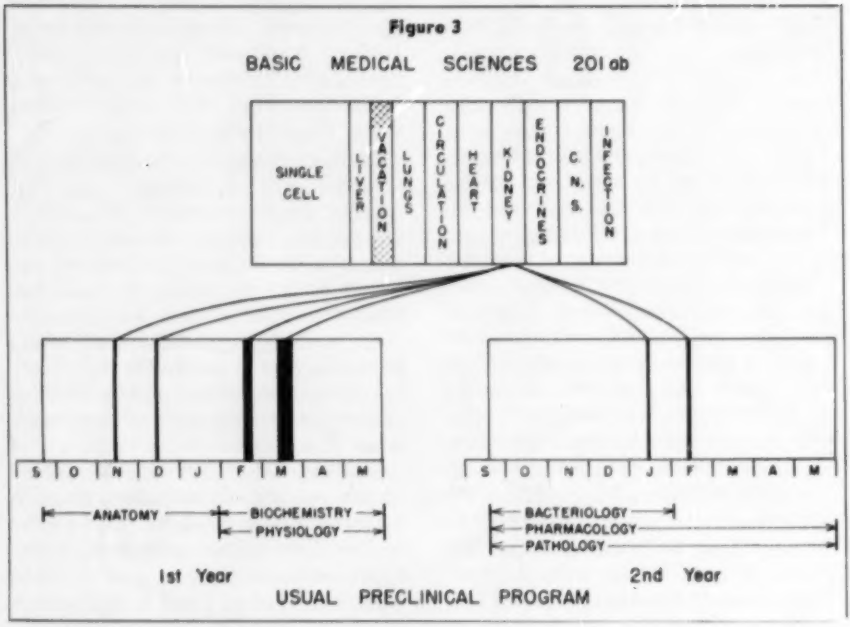
Whole class: *Excretion and thyroidal uptake of* I^{131} *in the human.* The students themselves served as subjects. The influence of various doses of thyroid was studied.

Student Group I. *Uptake of* I^{131} *by the rat thyroid,* as influenced by hypophysectomy, thyroxin or thyroid blocking agents.

Student Groups II and III. *Histophysiology of thyroid and adrenal cortex* in rats with altered pituitary activity.

Student Group IV. *Effect of parathyroidectomy and administration of parathyroid extract* on serum calcium and phosphorus in rats.

Figure 3



A TEMPORAL comparison of the treatment of the kidney in the usual preclinical curriculum and in Medical Sciences 201ab is shown above. The author is grateful to E. G. Ball, who originally prepared this diagram and gave permission for its publication here.

The aim of the staff is to see that experiments are well planned and thoroughly executed, and to emphasize the need for repetition of experiments to confirm data. During the period of the experiment, the students also examine and study relevant histological slides. It is necessary to ensure that during the course of the year, each member of the class carries out sufficiently varied experiments to enable him to obtain as broad an experience as possible, so that a student who engages in more biochemical work, for instance, in one "Type A" experiment will do more pharmacological or physiological work in the next. Thus, all the students become thoroughly familiar with the fundamental operations and gain an insight into the different approaches to the general topic under study.

During a "Type A" session it has been noticed that students turn their attention to a number of matters other than the experiment. For example, the group studying mercurial diuretics during the kidney experiments showed a lively interest in the properties and functions of thiol groups in general, while those using dextrans familiarized themselves once again with many features of polysaccharide chemistry.

Since work with the kidney has been quoted here as an example, it might be well to point out, as may be noted in Figure 3, that many aspects of a study of this organ are drawn together in one place, whereas

in a usual preclinical program they might normally be considerably spread in time.

An Assessment

The course has now been given for a second time and an early evaluation of the progress of the experiment is possible. Both students and teachers are unanimous in the opinion that the course is enormously stimulating and a considerable educational experience. The following points constitute the more important observations:

(1) The whole-hearted cooperation of individual departments was a powerful factor in allowing the course to swing into action rapidly and effectively. The enterprise rests squarely on strong individual departments with equipment and staff on which to draw, and from which the stimulus characteristic of their disciplines may flow. The present author wishes to emphasize that it is *cooperation of separate departments* and not the *loss of identity* of the separate departments themselves that has been the keynote of the experiment since it was first mooted. Consequently, the maintenance of a close liaison between each department and the unified course, through the departmental representative on the course staff, is vital.

(2) As is apt to be true of all experiments, the establishment of Medical Sciences 20lab has been expensive. The generous support of the Commonwealth Fund has made the venture possible. Expansion of the program would of course make the cost, calculated *per* student trained, much less. The student-to-instructor ratio is at present about two to one, and the staff is confident that this can be substantially increased without significant loss in the intimate contact that is so vital to such a program. It will, however, be necessary to determine with care what the maximum ratio is that will permit the existence of the many fine features of the present close relationship between students and faculty.

(3) In another sense, however, the method of teaching embodied in the unified approach is extremely economical, through the dovetailing of information from different fields and the elimination of overlapping and unnecessary repetition. The extra impact that material presented seems to have by virtue of its finding its proper *biological*, rather than simply biochemical, or bacteriological or pharmacological, etc., place is notable.

(4) The philosophy of presenting and examining selected areas with great thoroughness, and emphasizing their nature as *models* rather than adopting the extensive or encyclopedic approach, is an extraordinarily fruitful way of teaching, providing that the material chosen for presentation is capable of application to other areas and is not unduly specialized.

(5) As a result of the numerous conferences and discussion periods throughout the course, the students developed, in general, beyond average in their ability to present a clear, concise account of an experiment, and to argue for or against various aspects of a proposition.

(6) An enthusiastic and dedicated staff is virtually a prerequisite for the successful functioning of a program such as this one at Harvard. Although heavy demands on the time of the teachers were made, the stimulation and broadening of their horizons was a more than adequate compensation. Several members of the staff have entered into cooperative research programs on frontier areas between disciplines. It would seem that a

policy of constant rotation of the teaching staff would avoid rigidification of the course and provide constantly changing centers of interest. The freshness of approach that stimulated all participants in the venture during the first two years thus would be preserved. Accordingly, it is planned that every year two or three members of the teaching group will retire, to be replaced by other members drawn from their departments.

(7) Active and imaginative leadership is of prime importance to such a group of teachers. It would be impossible to describe the venture at Harvard without paying tribute to the inspiring leadership of Eric G. Ball, who has guided the planning and implementation of the program.

It is of interest to take stock of what changes were noticeable in the second year compared with the first. Some problems of integration of material, especially in the early phases, were attacked in a more satisfactory manner in the second year than in the first year. For example, the role of physical chemistry has been more happily established. A closer unity between biochemistry and histology and bacteriology exists, especially in the laboratory work and, indeed, the initial stages of the course, which were the most difficult in the first year, have been greatly strengthened and improved as a result of the better understanding of the teachers for the viewpoints of the various disciplines.

Although the course was specifically designed for beginning Ph.D. students in the basic medical sciences, it is serving as a laboratory for the "exploration" of medical student teaching at the preclinical level. To make the scheme complete for medical students, the integration of gross anatomy into the system would have to be worked out. Four medical students were enrolled in Medical Sciences 20lab when it was run for the second time, and they will receive instruction in gross anatomy early in their second year. During their second year, also, they will extend their knowledge of medical bacteriology, pharmacology and pathology to permit proper integration in their class.

The response of these four medical students has been greatly encouraging. It would be beyond the scope of the present report to dwell on problems of establishing an integrated course of medical students, but it is felt that the experience gained in the "laboratory" effort at Harvard should be invaluable in assessing the problems and potentials of such a curriculum, and the various directions which a unified course might take. In addition, a group of future teachers who will have had first-hand experience with a unified approach to the basic medical sciences is being built up.

The considerations of prime importance are, however, the enormous stimulation of students and teachers (both participants and nonparticipants in the experiment) which has resulted from the elimination of departmental boundaries, and the active realization of the contributions the individual disciplines can make to each other in research and education.

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Blood Red Tape

MAX S. MARSHALL

IN THIS AGE only an incurable idealist or a moron would say that something can be done about the red tape that, among other places, entangles modern medical schools and their hospitals. However, all participants in the activities of these institutions know how completely the life of an institution is stifled by it. The tape is blood red with the life blood of the units it entangles.

The present writer is too idealistic to make a good moron and too moronic to be a full-fledged idealist. The fact remains that the defeatist's attitude toward red tape, now so often encountered, is unhealthy and unproductive. A rear-guard action against red tape can at least reduce the rate of its encroachment and permit the restoration of some strength. We have been losing ground too rapidly.

To get at the problem we must first understand it. Red tape is a symbol eternally illustrated but seldom analyzed. Examples rush to the minds of victims so fast that words fail to keep up, but no one needs examples. The facts are universally known. Instead, we need to seek the sources of trouble in situations in which red tape is conspicuous and to make an honest appraisal. Some contributors to red tape, merely deluded, can be shown the errors of their ways; the more enthusiastic ones should have the tape wound tightly around their necks. There must be some etymologic relationship between angle, wrangle, strangle and entangle.

A medical school and its hospitals have come to be complicated integrators of the biologic side of science and the health of man. A medical school consists of buildings and their biologic contents. In the order of descending importance in budgets, the ratings of biologic content are: (1) laboratory animals, (2) researchers, (3) administrators, (4) teachers and physicians, (5) residents and interns, (6) nurses and (7) patients and students. The peculiar significance of this order can be tested by omitting Group No. 7. This would leave a surprising number of persons who would emerge from these buildings wearing startled looks, at best some weeks later, to inquire "what happened?" This is a major illustration of the extent to which principal goals have become secondary goals. Its pertinence lies in the elevation of red tape to the role of a goal in itself.

Students and patients are the reasons for the medical school and its hospitals. Students, though they must do all their own learning, need the guidance derived from the accumulated experience of their teachers. The varsity is made up of teachers and students, in medicine as in other schools. That anyone can deny this is surprising, yet it is denied. The functions of the school have been made complicated, leading to red tape.

The faculty of a medical school includes many part-time persons. Com-

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pare the roll with the number of students and you will find that if each member of the faculty of a medical school would take into his home or office one medical student, we could have an apprentice system without any schools at all. This is not proposed as a desirable solution. It is proposed to cause reflection in the minds of the purveyors of red tape. They do not have to organize, set up offices and start with blank forms every time more than two persons get together. Their ideas are both distorted and inverted. These purveyors are not indispensable; contrariwise, most of them would be dispensable with benefit to all. Red tape comes from the minds of men, including those of the faculty and even some who growl most loudly against it. The saying, "if the shoe fits, wear it," must be applied to dispensers of red tape.

Secret of Red Tape

The secret of red tape lies in indirection of method. It arises from deviousness, from complication of that which should be simple and from failing to keep an eye on the ball. It originates in the mistrust of persons who could be trusted, in a love of red tape for its own sake and in a dislike of tasks which can be passed to others. The roots can be found in an inner conceit, in imitativeness, in the gregariousness of man and in his laziness. In modern times, that peculiar concept of democracy which narrowly assumes that everyone must have a voice in everything leads to a thousand committees, miles of red tape and muddy mediocrity.

Medical schools sacrifice their students and patients in notable degree in favor of red tape. There are the dean's office, the hospital administrator, the purchasing department, the building and grounds, the laundry, the steward service, the business manager, the controller and various higher-ups, besides all the overlapping departments, committees and clinics. The list is not even well started. Each of these units has subdivisions; and the number of combinations and permutations whereby these groups can be tied together with red tape runs into an awesome figure. The yards of red tape used would be ridiculous were they not so tragic. That each unit has a purported "function" does not alter the point. The addition of names to a growing collection of autographs on a document is commonly regarded as accomplishment. There are good healthy haters of red tape in some of these units, but straight thinkers are sometimes fired on charges of lack of cooperation or violation of channels of authority. The story of red tape is pyramidal; it contributes to its own extension. For example, older men pad each other's scores and employ young men who assume that elders had reasons for their red tape, failing to discover that there is a better way.

Among the specific elements of which red tape is composed must be found the best ways to escape it. The committee system, for example, though I know well the protest to this remark, is a horrendous affair,[1] a perfect assembly line for turning out red tape. The democratic process, the pooling of minds, the spirit of cooperation and all the other trite sayings about the beauties of the committee system have overtones of truth, in that unquestionably there are matters which do require joint decisions. To say that the committee system is overdone does not condemn the democratic process. The point is that many things do not require joint

decision. Each unnecessary committee adds to red tape and confusion. Every unnecessary day that a committee exists is a bid for more trouble. Every bit of leeway which permits a committtee to exceed its bounds leads to added complications. Every meeting of a committee that could be avoided is wasted motion and another yard of red tape. Every item discussed which does not require the judgment of all concerned means more confusion, indirection and boredom. There is no need for at least three fourths of the existent committees. In those that are justified, there is no justification for three-fourths of the words spoken or written. Any report off your desk, taken at random, will prove this. Committees add yards of red tape with their devious channels, with multiple considerations of items requiring only single answers, and with a continuous invention of unwise new notions evolved because someone felt he should say something, because the committee exceeded its bounds, or most often, perhaps, because there is always a starry eyed person who thinks AB should be changed to BA, or in alternate years vice versa.

The idea that committees make procedures "democratic" has been as well sold as Hadacol, with similar validity and less alcohol. The founder of the original committee, unless he was merely gregarious, would probably be horrified at the conversion of his ideal into a tangle of red tape, in which equality of opportunity meant only that everyone should butt into everyone else's business. Wherever democracy lies no deeper than a committee meeting, all such meetings should certainly be converted into groups for the study of democracy. Yet high administrators have been known to suppose that a group is democratic just because it is a group. On this plane democracy is even confused with gregariousness.

Another contributor to red tape is the blank form,[2] as with committees abused rather than intrinsically wrong. Much of the time the blank form is a dictatorial set of sheets which assumes that users cannot read and write, cannot formulate a question or answer one concisely, cannot face fearlessly an unblemished sheet of paper and cannot find their Webster's dictionaries. Every opponent of red tape, and I am sanguine enough with it to believe that this includes a good majority, knows the types of persons who put the completion of a form ahead of the realities for which it was designed. These persons are incapable of recognizing the real objectives; to them the form is paramount. The questionnaire is an abortive form of the same principle[3] producing carloads of distorted data, thus making big by wrapping in red tape something which is innately small. Self-designated precisionists use questionnaires or opinionnaires to derive purported scientific answers for their pleasure, frequently demanding "yes" or " no" answers to questions akin to: "do you think socialism is better than communism?"[4]

These things, in themselves reprehensible, add to red tape because they are organized[5] into chains of activities. A controller may invent an unneeded blank form instead of doing his job. This type, like many supporters of committees, will explain his process of thought—past, present and future—in 20 pages explaining the origin and use of his blank form. The dean, caught by it or too weary to fight it, puts in his nickel's worth and another page, and sends it on. The whole thing could have been presented in three simple lines, using the

English language instead of a trite symbolism on red ticker tape.

Philosophy of Indirection

Red tape is a philosophy of deviousness or indirection. It exists today in government, business and institutions. It cannot be eliminated, but it can be reduced. It is expensive; one small spool of it should last a medical school for a year. Physicians, dealing almost entirely with direct methods and results, are among the least devoted to red tape of any of our citizenry. Professors, regarding themselves as dislikers of red tape, love to talk and do so. Their conversational contributions are likely to begin with the Greeks and come down step by step to a simple remark about yellow chalk. These talents and habits fall in with an excess of red tape. An active revolt against it is difficult for them because the devious approach is the familiar one. In a medical school and its hospitals we have professor-physicians and physician-professors, besides some of each in the pure form. We also have the usual hangers-on, the supervisors, controllers, managers, personnel bureaus and all those agents duplicated in government and business among whom gross incompetence due to red tape, albeit much of it uncontrollable without aid, is too often overlooked.

Why is our approach so often devious? Why do we ourselves invent the very red tape we hate so cordially? There must be reasons, and for these there must be answers. Red tape is rarely intrinsic to our tasks. No mysterious force imposes it on us from outer space. We bring it on ourselves. Let every committeeman not vitally concerned with the issue at hand resolve to keep still and there will be a remarkably short meeting. If those who avoided direct action by setting up the committee had resolved to deal directly with its issues, the committee probably would never have been formed; this applies to at least 75 per cent of all committees. Let no blank form be used where plain paper will serve; and go after whomever invented the form. When you get a 20-page "directive," sure to "implement" something at some "level" and create some kind of "atmosphere" *ad nauseam* in the language of artists in red tape, throw it away, call up the originator, ask what he is after in plain English; then, in forceful or diplomatic terms, whichever seem most effective, register a strong vote against the indirection.

Never make an extra carbon copy, and find means for reducing multiple copies, multiple signatures and multiple forms. These duplications are red tape, nuisance, complicaters of authority and multipliers of files and overlapping duties. Every carbon is a confession of administrative error. Throw out nearly all questionnaires, and all of those that require unqualified yes and no answers, but pause to take a pot shot at the originators, for in usurping the right to use a questionnaire they have asked you if you have stopped beating your wife. Deal only with responsible parties, but look out for the secretary who is a promoter of red tape. Differentiate between essential channels and those set up by artists in red tape, channels which should be by-passed with thumb to nose. Practice, every hour for the first week and every day thereafter, saying: "a requisition is a request for an article, a budget is a list of dollars each to be spent only once, and employees and employers are persons. Deviations from defined au-

thority in either direction add to red tape. A legitimate blank form is designed to cover a variety of contingencies; fill out only pertinent matters, whomever objects."

But never forget that the other fellow is not a mind reader. Those who fight red tape blindly are morally wrong and are vulnerable. The line between an aristocrat's bombastic storm against red tape and a gentleman's refusal to get involved in it may be subtle but it is vital. Red tape can even be useful to wrap snugly around the bombastic autocrat; pride, conceit, an air of superiority and the snobbish thought that red tape is for the underlings have no place here.

This story is on directness as opposed to indirectness. It concerns, among many, a personable man of admirable intentions whose job is administrative and who started in the usual way with realistic ideas. He was attracted by a dictaphone, filing cabinet and set of blanks as another man in the same harmless way might be unable to leave alone a saw and a board, or a book. He now lets documents " requiring" his signature pile up for vital months while he goes from one profitless meeting to another. He did not invent this shift; his guilt was in buying a notion foisted upon him, thereby adding fuel to the fire.

Who is guilty? As with so many things nowadays, nobody and everybody. Must we accept defeat because each of us is but one and the opposition is many? No. If democracy means anything, it means that we can get things done collectively with a retention of individual rights. Is there proof? There is. The red tape in which we are involved and from which we must extricate ourselves if we are to survive was and is done collectively. It is a *fait accompli* now, and is getting worse. The forces which permit growth can counteract it. Picture three men, a harassed dean, a harassed hospital superintendent and a harassed controller. Asked about red tape, each complains about it, yet it is woven right under their eyes. One of them speaks of the democratic process, another originates avoidable red tape and fails to see it and a third condones it by excessive participation.

Our hope lies in key men, but to get results they need our support and sometimes our prodding. They also need to understand the principle and the need for constant surveillance. They are near enough to the problem to have a sincere abhorrence for red tape and to do some active blocking. I am directly under three deans, a controller, a purchasing department, a maintenance man, a storekeeper, a librarian, a recorder and a business manager. If I have omitted someone, let him call himself lucky. Among these persons I know of no one who approves of red tape, but there are only a couple of good scrappers in the lot. For one thing, a rugged scrapper would not last. There are too many whose reaction is to say "conform, or else." Many persons who abhor red tape at heart actually think in its terms and foster its growth. In filling positions which lead to red tape, the basic attitudes toward indirection, committees and idealistic trivia should be weighed with the future in mind.

Plan of Action

Once employed, we are stuck with these persons and, be it said hastily, quite equally they are stuck with us. But with our help, they can do this, specifically, if they so will:

1. They can practice keeping their

eyes on real issues, noting and countering the users of excessive verbiage, vocal or written, with deviations from straight paths.

2. They can block the development of or throw out a good percentage of red tape by an active foresight, resistance, finesse, rejection or direct action by any legitimate means. Some of us would even support the use of illegitimate means without feeling too squeamish.

3. As changes in the personnel of the weaving rooms of red tape occur, there can be resistance to the addition of new busybodies. Many positions exist orly because of red tape. Executives, if they know the roots and realize the significance of red tape, can turn thumbs down on the type which is based on indirection in thought and move.

These points can be made thoroughly realistic and tightly specific. They are no pipe dreams. For instance, before a senior academic group spends a lot of time discussing a budget, realize that it should not do so. They should be restricted to their academic work; that is their task. Or, why should such a group spend hours on the legality of ordinary points of organization? If they know what they want, let them say so; yet just the other day a group, whose combined income probably exceeded $200,000, spent an hour on this sort of indirection. Only sturdy effort kept the discussion even near the direct issues on which their judgment was needed.

Red tape, blood red because it serves as a wick to our life blood, is made by man and can be kept within bounds by him, if he will try. No one doubts that the direct duties of a hospital and medical school are significant, nor does anyone really doubt what they are. We can fight for directness. We can resist, not concede. We can make every move in two steps: (1) seek what should be done; (2) find a direct path to it. That the end justifies the means is often doubtful; but when a legitimate end is stymied only by red tape, the end justifies any means. Think of the host of administrators who cite rules to thwart their enemies and to favor their own plans. Contrast them with the men who deal directly with realistic problems, find answers, and use rule books only for what they are, a form of orderliness.

It is later than you think. Red tape has become an end in itself, and its exponents are hourly more firmly entrenched. It winds here and there seemingly without source—beginning or end—as though it were made into a Möbius strip lending itself to a rationalized support of anything anyone wants to prevent or to put over. It is far more than a nuisance. It is a bad habit of thought and a reality. It is in control, putting that control in the hands of the small, the ambitious and the rationalizers, and taking it from the realists and from those directly responsible for primary duties.

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Observations on the Profile of Continuation Medical Education

WILLIAM FREDERICK NORWOOD

ONE OF medical education's principal problems in the years ahead will be the continuation education of practicing physicians. For the past two or three decades, postgraduate medical education has moved in the direction of meeting specific needs for such education. Historically, this trend has been contemporary with and no doubt is, in part, the result of the rise of specialism.

The dislocation of many thousands of medical men during World War II had a very direct effect on the character of both graduate and postgraduate medical education. All medical educators are familiar with efforts of the Association of American Medical Colleges and the Council on Medical Education and Hospitals to evaluate the size and nature of the postwar pool of physicians seeking professional refresher and learning experiences. The W. K. Kellogg Foundation and other agencies became interested in helping selected institutions equip themselves to meet the demands of returning medical veterans.

The Kellogg Foundation saw in this large-scale educational operation a capital opportunity to render a patriotic service. Also, the situation offered an opportunity to experiment further with the regional or decentralized concept of medical service and continuation education of physicians, which had characterized the successful operations of the foundation in southwest Michigan. The foundation did not, however, specify a pattern of regional or decentralized approach to the problem of any school. As a matter of fact, one or more schools included in the Kellogg-supported program of postdoctoral medical education expressed no specific intention of developing its program within such a context. Basically, the foundation hoped to aid medical schools to establish continuation education on a firm foundation.

Within the years 1944-45 to 1951-52, the Kellogg Foundation gave grants totaling $1,973,032 to this program. The grants were distributed among 18 medical schools. The director of the program, first Benjamin Horning (assisted for a time by Charles Wilkinson), and later Matthew Kinde, made one or more visits yearly to each school and received detailed annual reports from the responsible administrative officer in each institution.

Evaluating the effectiveness of a learning experience is regarded by professional educators as the third

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step in comprehensive educational planning. The first two are: (1) choosing and formulating educational objectives, and (2) selecting and organizing learning experiences.

In seeking an evaluation of its program, the foundation, it is assumed, had three main objectives:

1. To check the effectiveness of the overall program.

2. To secure an estimate of the performance of each participating school.

3. To have the benefit of the evaluation in planning future activities of the foundation.

I addressed myself principally to numbers one and two and accepted the following definitions as basic:*

1. Education is a process which seeks to change or modify the behavior patterns of human beings.
2. The kind of changes which schools and educators wish brought about are their educational objectives.
3. An evaluation of an educational program is a process for determining the extent to which goals have been achieved.

It must be conceded that until recent years medical educators in general have not concerned themselves seriously with the lore of professional education. At the postgraduate level in particular there has been limited curriculum planning in terms of clearly defined objectives and learning experiences specifically planned to achieve these objectives with preplanned instruments of evaluation designed to measure the results. Involved as continuation medical education is with various aspects of hospital, professional and community relations, it is doubtful that teaching and learning experiences at this level ever can be reduced to the simplicity of a simple classroom or laboratory experience.

In the early weeks of the study after several visitations, it was apparent that the data and statistics submitted by a given school would be valuable in evaluating the performance of that school but that no two schools could be compared objectively. Thus, it became increasingly apparent that the study would be essentially a clinical rather than a statistical evaluation. Nevertheless, considerable effort was made to reduce educational goals to objective terms. Further, an attempt was made to note any change in emphasis on goals between the years 1946-47 and 1950-51. This effort was based on the assumption that goals in 1946-47 might be colored by the emergency nature of the immediate postwar era and the goals emphasized in 1950-51 might be more characteristic of a period of normalcy.

The majority of objectives fell rather readily into four general classifications:

1. Goals related to a broad and liberal social interpretation with an emphasis on regionalism.

2. Goals related to meeting the demands of important segments of the profession—veterans, alumni, etc.

3. Goals related to the scientific practice of medicine.

4. Goals related to the practitioner as an individual.

These goals were explored separately according to: (1) the training of specialists and (2) the training of general practitioners. In each area, respondents were asked to add important goals which had been omitted and to eliminate goals which played no significant part in the planning or operation of the program.

Basic emphasis on goals in both

*Eugene R. Smith and Ralph W. Tyler: "Appraising and Recording Student Progress," Vol. 3, *Adventure in American Education*, Harper and Brothers, p. 3-15.

general practice and the specialties seemed to follow the same shift between 1946-47 and 1950-51.

- There was a distinct increase in emphasis on goals and objectives arising from a broad and liberal social interpretation of the role of a medical school.
- There was a marked decline in emphasis on goals and objectives related to the demands of veterans, alumni, etc.
- The goals associated with an emphasis on the scientific practice of medicine continued firm at a high level.
- There appeared to be some increase in emphasis on goals related to the physician as an individual, especially his habits of continuing education.

It is recognized that these goal areas are not wholly educational in nature. The first two in particular fan out into the zone of social organization and development.

Enrollment

According to Manlove, Anderson and Tipner, the total number of postgraduate courses offered by all medical schools in 1945-46 was 1,276. This count reached a postwar peak in 1947-48 of 1,800. In the three succeeding years the number of courses dropped to 1,445, 1,370 and 1,566. In 1951-52 the number bounced back to an all-time high of 1,869.

The profile of attendance for the same years reveals 45,955 for 1945-46, rising to a peak of 83,386 in 1948-49, one year later than the peak for number of courses offered. Attendance fell to a low of 46,183 in 1950-51, one year later than the low for number of courses offered. Attendance has leveled off at approximately 65,000 the past two years, showing no all-time high as does the number of courses in 1951-52. Interpreting rather broadly the council statistics on all forms of continuation medical education, it may be said that peak figures characterized the years 1947-49 and low marks are noted in 1949-51.

Enrollment in the continuation courses offered by the schools studied in the Kellogg plan began at 5,310 in 1945-46, and followed the course of an uninterrupted curve upward, reaching a total of 9,899 in 1949-50 and 9,773 in 1950-51. Attendance in the country at large reached a two-year plateau in 1947-48 and 1948-49, followed by a trough in 1950-51 and limited recovery thereafter, while the Kellogg group of schools rose steadily in enrollment, reaching its high plateau during the two years when enrollment generally was down. From first-hand observations and limited statistics for 1951-52, it appears that the percentage of normal decline, if any, for the Kellogg group after 1950-51 has been contrastingly less. In other words, the schools studied, as a group, maintained a sturdy and healthy postgraduate enrollment growth for a longer period, followed by less recession, compared with the statistics of all schools.

The Kellogg grants amounted to a total of $315,000 in 1944-45, rose to a peak of $361,000 in 1946-47, and then tapered off to $118,000 in 1951-52. For the most part, grants were made in the spring of the year and hence were incorporated by schools in budgeted income for the succeeding year. It may then be assumed that during the academic year of 1947-48 the greatest single sum of Kellogg funds was expended at the teacher level.

In the year 1947-48, the grant-aided medical schools reached a new

high in the number of full-time teachers and continued to rise, with one slight deviation downward in 1948-49, through the study period.

For 11 schools the period of grant aid had terminated by the academic year of 1951-52. Of these 11, six reported little or no difficulty in continuing to finance the postgraduate program to which they were committed. Five were experiencing some financial difficulty in maintaining the quality and quantity of the program.

The proper source of support for continuation medical education was frequently discussed. Through a questionnaire, an administrative officer (dean or director of postgraduate education) reported his opinion on each of two questions:

1. What percentage of postgraduate costs should be carried by tuition?

2. Should a state legislature appropriate funds specifically intended to subsidize the cost of offering continuation courses for graduate physicians in the state university?

On No. 1 the answers ran all the way from "very little" to "100 per cent." The average was 77 per cent. On question No. 2 seven of the nine state school officers reported favorably on state support. One state school officer reported negatively and one appeared uncertain. The five reporting "no" on this question are either opposed in principle to the proposition or they believe that state aid gives the state school an unfair advantage over competing private schools.

The basic question, still unanswered in some schools, is: shall we go all out to meet the postgraduate needs of practicing physicians and how much of the cost shall be covered by tuition.

Relationship to Organized Medicine

Because organized medicine has long demonstrated some interest in continuation education, administrators were asked to suggest the proper place of county and state societies and the Academy of General Practice in supplying postgraduate education needs. The large majority of respondents regard such agencies as appropriately cast in the supporting role of postgraduate activities, administered by medical schools. The great majority of department heads and postgraduate instructors who were interviewed held essentially the same view. Four school officers, who approved of independent planning and execution of postgraduate educational programs by agencies outside the school, are located in states where the state societies do operate in this manner. In such instances, however, there is for the most part a limited working relationship between the schools and societies and individual members of the faculties.

There has long been cooperative action in Michigan between the state society, the medical schools and the state health department, but the schools seem to be the principal molding influence in determining the character and quality of the courses offered. Similar relationships, although different in detail, prevail in Massachusetts, New York, Pennsylvania, California and Colorado.

In the schools studied, the postwar programs of continuation education have been a most important factor in bringing about a rapprochement between faculties and organized medicine. I believe that some of the most lasting benefits of the Kellogg grants will evolve from these improved relations.

Teacher Load, Attitude and Qualifications

The distribution of the teaching load in continuation education remained approximately constant in the two years compared, 1946-47 and 1950-51. Full-time teachers carried 55-57 per cent of the load, and voluntary teachers carried 29-30 per cent. The balance of the load, it is assumed, was carried by visiting teachers, although individual schools reported from 5 to 50 per cent of the teaching load being handled by visiting instructors.

The number of continuation courses offered during these years increased from 150 to 232. It is interesting to note that during the same period the responsibility for intern and resident instruction by full-time and part-time paid teachers remained constant at about 5 per cent of the teaching load. But because of the increase in volume of responsibility for house officer training assumed by the schools during this period, the actual teacher load (in hours) increased to 70 per cent in comparison. In other words, paid teachers, not voluntary teachers, took up the slack occasioned by expanding operations. The overall increase in full-time faculty (1,156 to 1,653) seemingly justified the added load but certain individual schools may have suffered.

An administrator in each school, with some knowledge of faculty attitude at the time of instituting postwar courses for returning veterans, was asked to characterize teacher attitude in general toward increased activity at the graduate or house officer level and at the postgraduate level. The replies are scaled as follows:

	Graduate	Postgraduate
Enthusiastic	7	3
Interested	5	9
Willing	6	8
Neutral	0	0
Uninterested	1	2
Opposed	0	0

Superficially, at least, it would seem that the increase in graduate responsibilities met with more hearty support than did the postgraduate program. This conclusion was essentially sustained by an extensive sampling of department head opinions throughout all of the schools.

A question intended to evaluate the relative interests of full-time and voluntary teachers in postgraduate teaching programs did not bring out any clear distinction between the two groups, but there seemed to be more frequently on the part of full-time teachers a disposition to regard postgraduate teaching as "extra chores."

There is evidence that teachers who have carried consequential responsibilities in postgraduate instruction have benefited from contact with alert, recent graduates who are anxious to learn and who receive instruction in a spirit of enthusiasm or constructive criticism. Other apparent advantages to the teacher are:

1. Stimulation of contact with both general practitioners and specialists who face the day-to-day problems of clinical medicine.
2. The intellectual gymnastic of reorganizing a body of knowledge and "pitching" it at a different level.
3. Increased respect for the place and work of general practitioners.
4. Insight into the results of weak undergraduate medical education.
5. Stimulation to review the undergraduate curriculum and to correct obvious errors.
6. Additional familiarity with vis-

ual teaching aids and other pedagogic methods.

7. Stimulation of contact with effective specialists who practice outside the orbit of a large medical center.

8. New ideas for research and investigation.

In an effort to weigh the desirable qualities of useful teachers at the postdoctoral level, administrators were asked to score as essential or desirable each quality in a list of 11. Assigning *essential* a value of 3 and *desirable* a value of 2 the composite scores are:

1. Moral and intellectual integrity	45
2. Ability to integrate basic science and clinical experience	44
3. Capacity to organize	38
4. Pleasant personality	30
5. Quick to establish confidence	22
6. Above average platform ability	22
7. Period of successful practice	16
8. Board certification	15
9. Active in research	13
10. Affable bedside manner	13
11. Self-confident and dominant	6

Other qualities were suggested, but they were essentially refinements of the above. It is generally conceded that there are no basic differences in the desirable personal qualities of postdoctoral instructors whether they be training specialists or general practitioners.

Anticipating major emphasis on the ability of postgraduate instructors to integrate or coordinate basic science and clinical knowledge, I sought an evaluation of two types of teachers: (1) the qualified basic science instructor with adequate clinical experience or insight and (2) the qualified clinical teacher with a good working knowledge of basic sciences related to his specialty. In the schools studied the adequately qualified clinician was more available than his basic science colleague. It is the overwhelming opinion of the medical educators interviewed or circularized that this type of teacher (the qualified clinician) will be in greatest demand in the future. Laboratory scientists will continue to be helpful, but the broadly based clinicians are the teachers on whom the major burdens of continuation education will rest.

Curriculum and Teaching Methods

Five of 17 schools felt that they had a planned curriculum sequence from the undergraduate level through the graduate level. If so, it is probable that their postgraduate operations are intelligently related to the whole. No school, in my opinion, has yet exhausted the possibilities of developing a master curriculum plan for the complete scale of medical education, including an articulate frame of reference for continuation education.

Early in this study it was hoped that the impact of the postwar graduate and postgraduate education on the undergraduate curriculum might appear to follow a definitive program. This hope did not fully materialize, but there are evidences of direct influences, mostly favorable. Many interviews support the conclusions that:

- Additional full-time clinicians with special basic science training have improved undergraduate instruction.
- Much specialty education has been crowded out of the undergraduate curriculum.
- The necessity for cooperation has tended to break down long standing departmental barriers, also making for departmental coordination at other levels.
- Undergraduates at times have

been permitted to attend postgraduate courses.

- Some teachers have engaged in postgraduate instruction at the expense of undergraduate education.

Educational methods and techniques received some experimental attention as a result of postdoctoral teaching. Some of these are:

- Adaptation of the clinical clerkship to the postdoctoral level.
- Reduction of purely didactic lectures in favor of clinical observation and participation.
- Broader use of seminars and conferences.
- Increasing use of audiovisual aids.
- Adaptation of electronic devices for teaching purposes.
- Use of well planned syllabi.
- Adaptation to classroom use of modern quiz, audience participation and stump-the-experts type of activity.
- Panel discussions.

Many teaching departments were materially strengthened through the use of grant funds by adding full-time teachers, especially in clinical departments. In most instances budget funds were found to retain these full-time positions after the termination of grants.

Regionalism and Decentralization

Students of the American social structure have long been thinking and planning in terms of the regionalism of community life. It is only natural then, that medical centers assume a meaningful relationship to smaller institutions within their respective and logical areas of influence. Extending this philosophy to the field of medical education implies the acceptance by the center of certain responsibilities on both the house staff and attending staff levels in outlying hospitals. Articulating the rural or regional institutions to the center by means of a flow of professional and educational services to the outlying institutions is sometimes referred to as decentralized postdoctoral medical education; i.e., both graduate and postgraduate. Regionalism and decentralization are the same in philosophy. The justifiable motive is to improve the quality and to increase the quantity of necessary medical care in outlying areas.

Eleven schools regarded their postdoctoral education as regional or decentralized in character. In 1951-52, 11 reported that they were "well established," two reported "expansion indicated" and two reported "status uncertain." It was in no sense discrediting to the status of regionalism or to the efforts of educators dedicated to this concept of postdoctoral medical education that no school administrator reported his school's relationship to regionalism as "satisfactory in every respect." The reports and first-hand observations revealed a becoming amount of modesty as well as a clear appreciation of the fact that for most schools the era of experimentation had not ended.

Distinct advantages have been claimed for regional relationships. Indeed, there are many indications of elevated standards of medical practice resulting from grant-supported regional programs.

It is the author's opinion that the most effective and lasting methods employed in educational relations with regional hospitals were directed to the establishment or strengthening of services which are a part of the functioning of well-run hospitals such as elevating the laboratory and x-ray services, or improving the edu-

cational quality of monthly staff meetings. What might be termed extracurricular or extramural activities for the attending staff, but designed for a hospital house staff, may have hearty endorsement by the attending staff at first but their ultimate tendency is to avoid or neglect such appointments unless they sign up for a series of hours for which a tuition is charged.

In large measure the success of a regional program depends upon the successful establishment of satisfactory professional and educational understanding (good public relations) between the medical school and the various related hospitals. Thoughtful planning and diplomatic action have achieved much to this end.

Enlightening answers were sought to the question: what methods are you employing to relate your planning for current and future postgraduate educational activities to the needs of the profession, individually and collectively? Several schools went to great effort to poll their students on various aspects of graduate and postgraduate education, and the results were useful. It is common practice to send out requests for course suggestions. Some have employed comprehensive questionnaires to test the market for continuation education.

From the nature of the replies generally, it is apparent that the problem of just how to chart the future of postgraduate medical education in terms of the needs and desires of the profession is not yet solved to the satisfaction of the majority. This conclusion was no shock to the author for he struggled, with little success, to develop a useful instrument of evaluation with sufficient common denominators to make it utilitarian and practical. The possibility of an extensive spot check or poll, conducted by professional pollsters, of physicians who had taken Kellogg-supported courses was abandoned after a test run failed to offer sufficient promise.

To offer a series of postgraduate courses based upon clearly defined objectives, with the tools of evaluation provided for in the structure and operation of the courses, might lay the base for the establishment of a useful methodology in the evaluation of postgraduate instruction. The field is indeed unlimited for educational experimentation. Evaluation, however, should be a useful tool and not an end in itself.

It seems necessary to rearticulate medical education to medical care at all levels—rural as well as urban. In the future the task of keeping doctors educated will be second only to that of undergraduate and graduate medical education. It is the conviction of the great majority of educators with whom I have discussed these issues that guidance and direction at both the graduate and postgraduate levels should stem from medical schools and the Association of American Medical Colleges. This conviction is no suggestion that the planning and promotion frequently carried on by organized medicine and specialty societies is unhelpful or inappropriate. The data being assembled and studied by Douglas D. Vollan of the Council on Medical Education and Hospitals should be most helpful. The functions of schools and outside professional organizations are not mutually exclusive. They can and frequently do engage in cooperative undertakings. Active practitioners at various levels may know best what they want in continuation opportunities, but well qualified educators who are sensitive

to the ground-swells of the profession and who can blend basic and clinical knowledge into practical instruction should give character to postgraduate education.

The stimulating lecturer with a wise use of audiovisual aids will continue to be in demand. The sporting quality of the clinical pathological conference type of instruction is always attractive. The value of ward-walks and informal conferences depends upon the amount of planning and dispatch in their execution.

I came out of a year's observation of both graduate and postgraduate medical education with the conviction that the most helpful continuation learning opportunity for many physicians, particularly general practitioners, would be a back-to-the-wards experience. Some adaptation of the ward clerkship or the internship to the advantage of practicing physicians for short or longer periods of full-time experience would help sincere and ambitious clinicians re-establish habits of self-education and orderly scientific thinking. It is symptomatic of our era that some physicians seek for gimmicks, gadgets and fast remedies. Indeed, the alert, conscientious practitioner must keep up with modern advances. In addition to lecture courses and clinical congresses, he might well work as a clerk under teachers who sense the urgency of quality in continuation education. I suggest this because success attended some postgraduate teaching of this nature early in the postwar period.

The challenge of postgraduate medical education will continue as long as the profession faces the necessity of discarding useless practices and the necessity of applying basic concepts to newer knowledge and methods. Continuation medical education is out of its swaddling clothes and into its adolescent years. The struggle for maturity is upon us.

Better Education Through the Western Commission for Higher Education

WILLIAM C. JONES

In December 1948, a group of the Rocky Mountain states' governors and their advisors met in Denver to explore the need for additional training facilities in the health sciences and to look for possible solutions.

A second interstate conference was held in the early fall of 1949. Shortly thereafter, at the Western Governors' Conference in Salt Lake City, a representative of the Board of Control for Southern Regional Education outlined the problem which prompted consideration of an interstate compact for pooling the higher education resources of the south and enumerated the benefits resulting from its adoption. As a result of this discussion, the western governors unanimously adopted a resolution strongly endorsing close interstate cooperation in higher education. Gov. Earl Warren, chairman of the Western Governors' Conference, appointed a committee to study the western situation and to present recommendations to the 1950 Western Governors' Conference.

At this committee's request, each western governor appointed two representatives to serve on a technical advisory committee and a third representative to serve on a legal committee.

At its first meeting in April 1950, the technical committee concluded that immediate attention should be focused on four specific health service fields: medicine, dentistry, veterinary medicine and public health, and special committees were appointed to survey needs and available training facilities in each field.

The plan and program formulated by the technical advisory committee, and the proposed interstate compact drafted by the legal committee, were submitted to the Western Governors' Conference in Denver on November 10-11, 1950. With minor changes the program was approved unanimously by the governors.

Colorado, Montana, New Mexico, Oregon and Utah ratified the compact in 1951, Arizona in 1952, and Idaho and Wyoming in 1953. California, Nevada, Washington and the territories of Alaska and Hawaii have not yet ratified.

The commission is composed of three commissioners from each state,

Dr. Jones is dean of administration at the University of Oregon, Eugene.

appointed by the governor for the four-year terms. It is stipulated that in each state one commissioner must come from the fields of higher education. Each state delegation appoints one of its members to be a member of the executive committee. This committee meets at frequent intervals. The commission holds an annual meeting in August. The present personnel of the commission includes college, university and public school administrators, practicing physicians, business executives, farmers and governmental administrators.

In June 1953, offices of the commission were established on the campus of the University of Oregon in Eugene. The present staff includes the executive director and a secretary. Each state is requested to contribute $7,000 per year for the administrative support of the commission.

The major activity of the commission in the past few months has been development of its contract program in medicine, dentistry and veterinary medicine. Six states in the region are now sending students to professional schools in three states under contractual arrangements in which the visiting student pays the instate tuition fee and his home state pays a subsidy to the institution.

The University of Colorado Medical School is receiving students from Arizona, Montana, New Mexico and Wyoming while the University of Utah College of Medicine receives students from Arizona. The School of Veterinary Medicine at Colorado Agricultural and Mechanical College receives students from Arizona, Montana, New Mexico, Oregon, Utah and Wyoming while the University of Oregon Dental School has students from Arizona, Montana and Wyoming. The annual contract fee is $2,000 in medicine, $1,600 in dentistry and $1,200 in veterinary medicine.

Approximately $300,000 in contracts have been authorized by the state legislatures. Ninety-two participated in the 1954-55 program: 16 from Arizona, six from Montana, 27 from New Mexico, 10 from Oregon and 28 from Wyoming.

The mechanics of the contract program operate through the commission's office. The state requests the commission to provide the desired number of places in each professional field and agrees to pay the stipulated annual subsidy. The commission then contracts with the private and public professional schools in the region to receive the same number of students, subject always to the right of the school to refuse admission to any student who does not satisfy the entrance requirements of the particular school. The commission, after the beginning of the school year, is billed by the schools for the tuition fees. It, in turn, bills the states and, upon receipt of the funds, sends payment to the schools.

Some of the states require a contractual arrangement with the students under which the student agrees either to return to his home state to practice for a variable period or to reimburse the state for payments on his behalf.

Anticipated developments in the near future years will probably be through the expansion of the present contract program rather than entrance into additional fields of contractual relationships. Several of the states now in the contract program will probably increase their participation by subsidizing more students and expanding into additional fields of higher education. States not now contracting are examining their needs and preparing requests for funds from their legislatures. The entrance of California and Washington into the compact would materially expand

the number of contracting institutions since these states have several professional schools, both public and private.

It is the consensus that the present number of schools of medicine, dentistry and veterinary medicine is sufficient for the west if the contract program can implement the free exchange of students across state lines in such a way as to bring all of these professional schools to optimum size in enrollment of highly qualified students.

The Western Interstate Commission for Higher Education has no preconceived plan to "sell." It does not conceive its responsibility to be that of imposing programs on states or institutions. It is careful to respect the autonomy and individuality of the institutions in the region.

However, the commission has recently stated as a fundamental policy that it will be "its purpose to organize regional conferences and working committees for the discussion and implementing of any curriculum or program which would further interstate cooperation in higher education."

Thus, the commission conceives its function to be that of an agency which can originate planning and action, on its motion, in fields where such seem to be needed and desirable. It will also serve as a service agency to the states and their citizens and institutions of higher education, through which programs and projects can come into being as the result of the voluntary interest of state, sectional and regional groups in initiating and implementing programs in cooperative higher education.

A Practitioner's Outfit

WHEN I GRADUATED in the spring of 1869 I purchased a minor surgical operating set for which I paid the enormous price of $25, and a pair of saddle bags which cost $6.50 . . . There were 12 medicine bottles with glass stoppers and a small pair of apothecary's scales, and these I faithfully followed until I became expert enough to determine the dosage upon the point of the spatula which fitted into the saddle bags. Another and very important bit of my practitioner's outfit was two pairs of tooth-pulling forceps, in the use of which we had not been drilled beyond the general direction to get a good deep hold and then pull till something came loose. Last but not least was my sign.—Dr. John A. Wyeth in *Minutes of the Proceedings*, Association of American Medical Colleges, March 1909.

Reports of Allied Organizations

1. National Board of Medical Examiners

A NUMBER OF PROBLEMS have occupied the National Board of Medical Examiners this past year, especially relationships between the national board and state boards of licensure. Seven areas of difficulty are described below, in each case including the position of the board's Executive Committee to these difficulties and citing positive action which has been taken where action appeared possible.

First is the impression that we have surrendered our control of the examinations to the Educational Testing Service, of Princeton, N. J. Nothing could be further from the truth, but we fully realize that to someone unfamiliar with the internal workings of the board, it may appear to be the case. Our contract with ETS specifically states that the services rendered shall be such as are requested by us and shall be performed under our direction and with our guidance. The examination is completely in our hands and ETS acts as technical advisor only. To emphasize this point, a change in procedure is now under way so that henceforth all of the detailed work related to the content and development of the several tests will be done in the offices of the board under the direct and immediate supervision of the physician members of the board's staff. The Educational Testing Service will serve in an advisory capacity and will do only the technical part of scoring and analyzing the results.

Second is the feeling that the objective examination is less valid and searching than the essay type. Recognizing that this is an honest difference of opinion, which we do not endorse, the Executive Committee instructed the president to appoint a special committee to restudy the clinical examinations constituting Part III, and in this study to give consideration to the inclusion of a written essay examination on clinical medicine.

Third, it is held that the National Board of Medical Examiners is not a legally constituted licensing agency and hence its examinations cannot be accepted by the individual states. There is no pretense now or at any time in the past that the board is in any way a licensing agency. It exists to serve American medicine and to conduct its affairs in such manner that individual state boards—the only constituted licensing authorities—may in their discretion recognize the merit of its examinations and accept

Annual reports of groups allied with the Association of American Medical Colleges are submitted to the AAMC at Annual Meeting time for publication in the Minutes of the Meeting. Summaries of two of these reports, which were received too late for inclusion in the official Minutes, are published on the following pages.

the national board certificate as a valid index of ability and competence.

Fourth, it has been the practice of the board to admit to its examinations foreign trained physicians who meet eligibility requirements of the national board, but who may not be eligible for licensure in some states. After due consideration, the Executive Committee has adopted a resolution *excluding from its examinations* candidates from medical schools outside the United States, its possessions and Canada except on specific request by a state board.

Fifth, it is alleged that the National Board of Medical Examiners has exercised unwarranted influence on medical school policies and, in particular, that some schools have required students to pass examinations as prerequisite to promotion or graduation. Where this has occurred it is the result of a policy decision on the part of the individual school in direct conflict with the affirmed convictions of the national board. The board has continually held firmly to the conviction that no examination should be used as the *only* basis of evaluating the progress of students. In the opinion of the national board, it is the obligation of each medical school to make the final decision on promotion or graduation of its students on the basis of all its information about them, of which the performance in a written test constitutes only a part. Recently, because of the increasing number of medical schools interested in this procedure and because of questions arising from state boards, we sent a letter to each of the schools concerned to reaffirm this policy for clear understanding. The replies from the deans gave clear evidence that medical school faculties not only approve this policy, but also would vigorously oppose the use of national board examinations as absolute and final in arriving at grades for their students.

Sixth, it is stated that current procedures of the board are in conflict with specific laws of certain states. It cannot be denied that difficulties have arisen from time to time in relation to the variability of state laws and regulations throughout the country. The national board, however, has constantly endeavored to adjust its own program to comply with state law. For example, the board has recently revised its procedure so as to make the objective examination questions and answers available to a state board.

Seventh, there is objection to the fact that the National Board of Medical Examiners includes active members who are not licensed physicians. Primary consideration has always been given to the qualifications and abilities of those elected to the board. The members who act as chief examiners in each subject have always been drawn from those prominent in their respective fields of medicine. All of the chairmen of the Test Committee who are responsible for the examinations in the clinical subjects are physicians, outstanding in the practice and teaching of their specialties.

It is our belief that a good deal has already been accomplished. We are facing our problems squarely and, where possible, taking prompt action to remedy the cause of difficulties as they may arise. We may, I believe, take justifiable pride in our accomplishments to date and look with confidence to the future.—WALTER A. BLOEDORN, *dean, George Washington University, member of Executive Committee, National Board of Medical Examiners.*

2. Student American Medical Association

THE most important milestone yet reached by SAMA was gained only a few months ago. It was then that we appeared before our greatest benefactor in point of gifts and talents, the Board of Trustees of the American Medical Association, to report that as of last April SAMA was in a position to assume all of its responsibilities, both tangible and intangible.

SAMA's action taken, our group became a completely independent and autonomous association of about 18,000 members in 67 medical schools. With your continued good help and the support of others in medicine, we feel certain we have taken a wise and forward step.

The activities of our association have been essentially in the field of student welfare. In this respect our greatest accomplishment to date has been the inauguration of our SAMA Life Insurance Program. During the past vacation period, representatives of SAMA and the Minnesota Mutual Life Insurance Company, underwriters of the plan, called upon many deans to explain the program, which gives each of our members the best term life insurance program we've yet heard of.

In capsule form, SAMA Life is available to all members, and the original response to the program was so great that the effective date of the plan was moved ahead several months. The policy provides $5,000 term insurance without a medical examination for only $25 annually. The policy is renewable through the third year following internship, there is no medical examination required at the first application, nor when the term policy is converted. The policy has no war clause and a total disability clause cancels premiums during the disability. These and many other features have stamped SAMA Life as the finest program yet tailored for a professional group.

We are also working on a plan to provide our members and their families with hospitalization insurance at the lowest possible premium. Presently we are surveying our membership to determine just what the specific needs are for this type of protection. Once having found the needs we have several companies waiting to "cut" a policy from the "cloth" we provide.

Other activities of SAMA include help for students with financial problems. In the foreseeable future we hope to have both loan and scholarship funds for the use of our folks.

We are making progress annually on our program of internship evaluation. When fully developed our clearing-house will become a most valuable adjunct to the programs presently carried on by the AAMC and the AMA. The evaluation form developed by our Committee on Graduate Education is now being used throughout the nation, and we understand several deans are using it as their official form.

SAMA is also genuinely concerned by the drop in applicants for medical school. To this end we have encouraged our component chapters to conduct career guidance days for high school and premedical students. By introducing these folks to the feel and smell of medicine, we hope to combat some of the problems caused by an overcounseling of qualified persons out of medicine and into other professional fields.—RUSSELL F. STAUDACHER, *executive secretary, Student American Medical Association.*

Editorials and Comments

Medical Schools in the Practice of Medicine

IN THE BASIC PATTERN of fee-for-service practice of medicine, it is implicit that in the interests of maintaining fair competitive conditions for all physicians, corporations are barred from hiring physicians and entering the general practice of medicine. Not only has the organized profession recognized this principle in its code of ethics, but at least five of our states have recognized it by making it illegal for a corporation to engage in the general practice of medicine.

When our colleges and universities began the period of marked expansion of student health services in the 20's, there was an attempt made in many schools to keep the institution totally out of the practice of medicine by making the objectives of the student health service primarily preventive and educational, and leaving the definitive care of the sick to practitioners of the community. After a thorough trial of over 20 years, this arrangement was found not to be practical. College after college gave it up after trial and by 1940 practically all student health services of the country had accepted the responsibility for providing partial, if not complete, medical care for its students. One point, however, was kept clear: the student health physicians paid by the university were not doing a general practice, they were limiting their practice either to students of the institution only, or to students and faculty only. Educationally it was adjudged sound to demonstrate to students how a group of physicians could provide an effective and comprehensive medical service on a modest prepaid fee.

Our medical schools now are going through the throes of working out a formula that will meet their somewhat different needs and yet be fair to those in the general practice of medicine. Though the movement toward providing full-time clinical teachers in our medical schools started early in the century, it is only since World War II that it is rapidly becoming the rule that, in order to get the necessary continuity in the teaching and research program, there be at least a nucleus of full-time teachers in such basic clinical departments as medicine, surgery, obstetrics, pediatrics and psychiatry. The greater part of the clinical teaching continues, however, to be provided in most schools by selected members of the local profession who volunteer their services without cost to the school.

That the situation and needs of a medical school are unique is recognized by at least one state which makes the general practice of medicine by a corporation illegal. It solves the difficulty by the simple device of exempting the medical school of the state university from the provisions

of this law. This, however, would appear to be a questionable approach and one with quite limited applicability.

If clinical teachers in significant numbers are to be paid full-time salaries by their medical school, then that school must almost perforce be tax supported or be permitted to engage in the general practice of medicine and collect from patients the fees needed to pay the staff salaries.

If clinical teachers are to be paid partial salaries by their medical school and then permitted to organize under their own leadership a group practice arrangement which will enable them to supplement their medical school salaries (the "geographic full-time" arrangement), the school can thereby provide itself at reasonable cost with a clinical teaching staff always available at the teaching hospital, and without itself actually entering the general practice of medicine.

While this latter arrangement satisfies the requirement of the law it still may, unless proper safeguards are set up, operate in such a way as to place the school-connected physicians in such a favored competitive position over that afforded the local practicing physicians that it becomes an obvious example, for every student to note, of unethical professional practice.

From the educational standpoint it would appear essential that the clinical practice arrangements of a medical school should be so organized as to serve as a fine and practical example to their students and the whole community of how a team of well-trained service-minded physicians can organize their group practice so that it will (a) modestly supplement their small medical school salaries, (b) make possible giving the major portion of their time to their medical school duties, (c) afford the continuing experience of the practice of medicine which is so essential for a clinical teacher, (d) maintain cordial relationships with the practicing profession of the community.

Though it is not easy to fully realize this ideal objective, there are many schools that have apparently approached it very closely, and on analysis the basic reasons for their success appear to be as follows: great care has been given to choosing clinical teachers who are academic-minded and service-minded, and are willing to live simply; the dean has been willing to maintain close observation and to terminate promptly geographical full-time arrangements with teachers whose practice interests have come to dominate their academic interests; the practicing profession of the area has been kept well informed regarding the "geographic full-time" plan, and has become convinced that the school-connected physicians are honestly limiting their group practice to consultation and referred practice and are assuming only as much of that as is essential to maintaining their clinical proficiency, a wide variety of teaching cases, and a means of modest supplementation of their medical school salaries.

This whole matter is a vital one for medical schools as well as their affiliated hospitals. It is under study by numerous interested groups at the present time and it is to be hoped that a formula can be found that will be workable for the schools and fair to all concerned.—D.F.S.

Conferences on Medical Education

ONE OF THE MOST significant developments in medical education has been the attention which various scientific and professional groups are devoting to the field. At its recent fall meeting, the American Physiological Society offered as a special dividend a session by Julius Comroe on methodology in teaching pulmonary physiology. Informal reports from non-pulmonary physiologists indicate that Dr. Comroe's dividend was highly rewarding.

In the spring of 1954, a group of professors of internal medicine discussed problems in their area at the time of the annual meeting of the Society for Clinical Investigation. For the past two years, the Markle Foundation has gathered its scholars for discussions on medical education.

The Committee on Medical Education of the American Academy of Pediatrics has sponsored for four years annual regional conferences for educators in the pediatric field. The theme of the conferences vary from region to region and usually elicit a day of provocative discussion. "Maternal and Child Health in Relation to Pediatric Teaching," "Instruction on the Newborn" and "Problems in Medical Education Involving Pediatric Interns, Residents and Rotating Interns" have been general topics for discussion. Fortunately, the summary reports are transmitted to all medical school deans in the United States and Canada. In some instances the reader can only wish that the discussions had been reported in greater detail.—J.Z.B.

NEWS DIGEST

Dr. Bowers Accepts New Post

Dr. John Z. Bowers will become the dean of the University of Wisconsin Medical School, effective July 1. At present Dr. Bowers, chairman of the Association's Editorial Board, is dean of the University of Utah College of Medicine.

DR. BOWERS

DR. MIDDLETON

He will succeed Dr. William S. Middleton, vice president of the Association in 1953-54. Dr. Middleton, who has been dean at Wisconsin since 1935, will devote full time to research and teaching.

Markle Grants

The John and Mary R. Markle Foundation has granted $3,229,000 to medical schools in the United States and Canada for aid of faculty members through the "Scholar in Medical Science" program.

Since the program began in 1948, 60 medical schools have shared the grants to help selected young faculty members become established in teaching and research.

Seton Hall

A lease has been signed by which Seton Hall University will take over the clinic building in the Jersey City Medical Center and convert it into the first medical college in New Jersey.

Both medical and dental schools will be established in the 16-story building, and classes will begin next September for approximately 125 students. The city will receive an annual rent of $275,000 under terms of the 50-year lease.

Clinical Journal Editor

Dr. William D. Robinson, professor of medicine at the University of Michigan Medical School, has been appointed editor of the *Journal of Laboratory and Clinical Medicine*. Dr. William H. Beierwaltes, associate professor of medicine, has been named associate editor. Both appointments were effective January 1.

Infantile Paralysis Foundation

The National Foundation for Infantile Paralysis has announced the availability of a limited number of fellowships for social scientists interested in the emotional, psychological and social factors related to rehabilitation of the physically handicapped.

These fellowships are awarded as part of the foundation's program of professional education. Further information may be obtained from the National Foundation for Infantile Paralysis, Division of Professional Education, 120 Broadway, New York 5, N. Y.

Surgeons' Sectional Meeting

More than 2,500 surgeons, surgical specialists, nurses, anesthesiologists and other medical personnel from the United States and Canada are expected to attend the four-day sectional meeting of the American College of Surgeons in Cleveland, February 21-24.

The program will include panel discussions, symposiums, surgical clinics in eight Cleveland hospitals, scientific papers and cine-clinic films. Separate programs will be presented in the surgical specialties of obstetrics, gynecology, ophthalmology, orthopedic surgery, otolaryngology, thoracic surgery and urology. Dr. Stanley O. Hoerr, Cleveland, is chairman of the committee on arrangements.

Runyon Fund Grants

The November allocations of the Damon Runyon Memorial Fund for Cancer Research amounted to $120,620 for institutional grants and $8,200 for fellowship funds.

This brings the total Runyon Fund appropriations to $8,456,898 for 493 grants and 296 fellowships to 183 institutions in 48 states, the District of Columbia and 15 foreign countries. Among the countries are Austria, Belgium, Canada, England, Finland, France, Germany, Ireland, Israel, Italy, Mexico, Norway, Scotland and Sweden.

Medical Education Congress

The 51st Annual Congress on Medical Education and Licensure will be held February 5-8 in the Palmer House, Chicago. The congress is conducted under the auspices of the Council on Medical Education and Hospitals of the American Medical Association, the Federation of State Medical Boards of the United States and the Advisory Board for Medical Specialties.

One of the highlights of the meeting will be a special program on "The Potential Use of Television in Postgraduate Medical Education."

Medical Education Pamphlet

Only increased public interest and support can solve the financial crisis which faces America's medical schools, according to a pamphlet entitled "The Challenge to Medical Education," recently published by the Public Affairs Committee.

Written by Robert M. Cunningham Jr., editor of *Modern Hospital*, the booklet points out that, while in many ways the medical establishment of our nation is stronger than ever, the increased costs of medical education present a grave threat to future growth. At present, the average medical student can afford to pay only about one-fifth of the cost of his training. "Plainly, more and more groups must accept an increased share of responsibility for the support of medical education," Mr. Cunningham writes, "if we are to expect the schools to perform fully and effectively in the future."

Volunteer Visiting Lecturer

Dr. Jacques P. Gray has been appointed by the board of directors of the American Medical Writers' Association as a volunteer visiting lecturer on medical writing. Dr. Gray was formerly dean and professor of preventive and public health medicine, Medical College of Virginia, and dean, superintendent of hospitals and professor of public health medicine, University of Oklahoma School of Medicine.

He will appear under the auspices of the writers' association's educational committee and will be available to give lectures on medical writing to medical school undergraduates, and to interns and residents of teaching hospitals in the United States and Canada.

Rockefeller Foundation Grants

The Rockefeller Foundation appropriated $16,771,582 in grants in 1953, according to a review issued by Dean Rusk, president of the foundation. Of this amount, $3,820,000 was granted in the field of medicine and public health. Mr. Rusk noted that increased emphasis must be placed on medical education in order to provide the necessary trained personnel, particularly in less developed countries.

The main areas of interest to receive foundation funds are profes-

sional education, virus research, medical care, and human behavior considered both from the physiological and social approaches.

The grants included $200,000 to the Johns Hopkins University's Institute of the History of Medicine; $500,000 to the American University of Beirut, Lebanon, for the development of the medical faculty; $121,000 to the Indian Council of Medical Research for fellowships, and $62,000 to the London School of Hygiene and Tropical Medicine for the establishment of a field research station.

National Health Council

Dr. Hugh Rodman Leavell has been chosen president-elect of the National Health Council by the board of directors. He takes the place of Dr. T. Duckett Jones, who died November 22. Dr. Leavell will succeed to the presidency at the council's annual meeting in March.

Dr. Leavell has been professor and head of the department of public health practice of the Harvard School of Public Health since 1946, and is a former president of the American Public Health Association.

Standard Oil Grants

A new program of aid to education, involving total contributions of $450,000 to 138 privately supported colleges and universities, was announced recently by the Standard Oil Company (New Jersey). The gifts will be used for undergraduate study.

The company also announced that it was giving $50,000 to the National Fund for Medical Education to help financially pressed medical schools. These contributions are in addition to other forms of financial support that the company and its affiliates give to education, including research grants.

These recent contributions brought the total amount given by the company to educational institutions last year to $1 million.

Medical Library Association

The Medical Library Association is offering four scholarships of $150 each for summer school courses in medical library work in 1955. Two of the scholarships will be available at Columbia University and two at Emory University.

Applications for the scholarships should be submitted at the time of application for summer school enrollment. April 1, 1955, is the closing date for scholarship applications, and candidates must have already been accepted by the school.

The course at Columbia is a survey and evaluation of library resources in medicine, with emphasis on bibliographical and information sources. For further information, write to the dean, School of Library Service, Columbia University, New York 27, N. Y.

Emory's course is an introduction to medical library resources and their use in medical education, medical research and care of the patient. For application forms and further information address the director, Division of Librarianship, Emory University, Georgia.

College Briefs

Albany

The Public Health Service has awarded a grant of $12,000 for continuation of a study of tumors arising spontaneously in the mammary glands of rats. The project is under the supervision of Dr. J. M. Wolfe, director of the department of pathology and bacteriology.

Dr. J. Garth Johnson has been promoted to the chairmanship of the department of public health. He succeeds Dr. Herman E. Hilleboe who is commissioner of the New York

State Department of Health, Dr. Hilleboe will retain his professorship in the department of public health at the medical college.

Arkansas

Contracts have been awarded and construction started on a building to house the schools of medicine, pharmacy and nursing at the new university medical center. The first unit in the center, a 450-bed teaching hospital, is virtually complete and will be occupied in July 1955. The new building is expected to be ready for occupancy by the fall of 1956. Total cost of the two buildings will be approximately $13 million.

Colorado

Dr. CHARLES WESLEY EISELE has been appointed director of postgraduate medical education at the school of medicine. He was formerly associate professor of medicine.

The $350,000 addition to Colorado Psychopathic Hospital is scheduled for occupancy early this year. The two-story structure will house the children's psychiatric clinic, including outpatient services and administrative offices.

Duke

The new chairman of the department of pediatrics is Dr. JEROME S. HARRIS, professor of pediatrics and associate professor of biochemistry. Dr. Harris succeeds Dr. W. C. DAVISON, who is dean of the medical school and James B. Duke professor of pediatrics.

Georgia

Dr. LELAND D. STODDARD has succeeded Dr. EDGAR R. PUND as professor and chairman of the department of pathology. Dr. Pund has accepted the presidency of the college.

George Washington

Facilities for basic research in arthritis were made available for the first time at the university when a new arthritis research laboratory was opened recently. Dr. THOMAS MCPHERSON BROWN, professor of medicine, is director of the university's arthritis research program.

Funds for the laboratory were provided by a $12,000 grant from the Eugene and Agnes Meyer Foundation.

Georgetown

Dr. A. EARL VIVINO, medical director of the university health service, has been elected president of the District of Columbia Health Association.

Five medical research grants have been received from the Public Health Service, totaling an amount of $44,476. Dr. EDWARD D. FREIS, adjunct clinical professor of medicine, received $15,266 for the chemotherapy of hypertension and $7,257 for transcapillary exchange of permeable tracer substances.

Hahnemann

A grant of $110,000 has been awarded to the medical college by the National Heart Institute, to cover research over a three-year period by the Institute for Cardiovascular Research on coronary artery disease.

It has also been announced that MYER FEINSTEIN, recently elected president and chairman of the board of the Allied Jewish Appeal, has been appointed to the board of trustees of the medical college.

Harvard

Gifts totaling $4,373,164 were received by the university during the third quarter of 1954. The gifts included $2,444,126 for capital endowment and the remainder for current use. The largest single gift for capital was $844,391 as an additional sum for the Arthur W. and Francis J. Moors Fund from the estate of John F. Moors.

Jefferson

Dr. HARRY C. CHURCHILL DAVIDSON, in charge of anesthesiology at St. Thomas Hospital, London, lectured on hypothermia to the students and faculty of the college recently. Dr.

Davidson is being sponsored by the college under a traveling grant of the Fulbright fellowship fund.

Kansas

A dedication ceremony and open house at the McIlvain Biochemical Cardiovascular Laboratories was held in November in the medical sciences building of the university medical center. Dr. SANTIAGO GRISOLIA, associate professor of medicine and biochemistry, has been chosen as the McIlvain investigator in the field of heart disease.

The investigatorship was established last April by a grant of $54,000 to the medical center from funds made available by the trustees of the Frederic Ervine McIlvain Memorial Fund.

Louisiana

A total of $261,180 was received from outside sources by the school of medicine in the period from July to October. Eighteen of these, amounting to $137,121, are for research; another $110,909 from five grants is to be used for undergraduate teaching and one grant for $13,150 is for graduate training in psychiatry.

Dr. ERNEST BUEDING, professor of pharmacology, has received a grant for a study on the biochemistry of parasitic helminths. Dr. RUSSELL L. HOLMAN, professor of pathology, and his staff will continue a study of the pathogenesis of arterial lesions, and Dr. WALTER J. BURDETTE, associate professor of surgery, will carry on his research on tumors of fruit flies and their relation to a pupating hormone.

The grants for undergraduate teaching are from the Public Health Service for the fields of mental health, psychiatric nursing, cardiology and cancer.

Marquette

Dr. JOHN S. HIRSCHBOECK, dean of the school of medicine, has been appointed to a one-year term on the Federal Hospital Council of the Department of Health, Education and Welfare. He will represent the medical profession on the council provided by the Hill-Burton Hospital Construction Act to determine policy and rules for the administration of the act.

Medical Evangelists

The college has received the largest appropriation in its history, amounting to more than $700,000, from the Seventh Day Adventist denomination which sponsors the school.

The building fund committee has announced that $1,048,710 has been pledged by alumni and professional friends of the college. Building funds coming from dentists' and physicians' groups is expected to reach $1,800,000 by the end of 1956. The other two-thirds of the $5,700,000 expansion total is scheduled to come from the Seventh Day Adventists.

Missouri

The board of curators has awarded contracts totaling approximately $3 million for the construction of a new medical science building. The four-story building will provide space for the administrative offices and the departments of anatomy, biochemistry, microbiology, pathology, physiology and pharmacology. Other facilities will also be included in the building.

Dr. ELMER D. BUEKER, associate professor of anatomy, has received a grant of $12,989 from the Public Health Service for research on microsome derivatives of neoplastic cells.

N. Y. U.-Bellevue

Dr. ROBERT C. WARNER has been promoted from assistant to associate professor of the department of biochemistry of the college of medicine. Dr. Warner has been doing research on the chemistry of proteins, including work on the physical properties, electrophoresis, metal binding and denaturation of proteins.

Research into the development of melanoma will be aided by a third grant from the Damon Runyon cancer fund to Dr. H. CLARK DALTON,

associate professor of biology at the Washington Square College of Arts and Science.

A check was presented by the Fraternal Order of Eagles, on behalf of the fund. The Eagles, who have donated more than $500,000 to date, are the largest single contributors to the Runyon fund.

The Phi Delta Epsilon medical fraternity presented its 1954 distinguished service award to Dr. HOWARD A. RUSK, director of the Institute of Physical Medicine and Rehabilitation at the Bellevue medical center. The honor was presented at the fraternity's 50th anniversary banquet in the Waldorf-Astoria Hotel on December 27. Dr. Rusk is also an associate editor of the New York *Times*.

State U. of N. Y., Brooklyn

Dr. R. JANET WATSON, formerly associate professor of medicine at the college of medicine, has been named associate professor of pediatrics. Dr. Watson's new position will enable her to pursue her interest in pediatric hematology. In addition to teaching third- and fourth-year medical students on the pediatric wards at Kings County Hospital, she will continue to teach a course in clinical pathology.

Sir LIONEL E. H. WHITBY, regius professor of physics and a former vice chancellor of Cambridge University, is serving as visiting professor of medicine this month.

Dr. HOWARD A. EDER, investigator in the metabolism laboratory of the National Heart Institute, has been appointed associate professor of medicine at the college of medicine.

State U. of N. Y., Syracuse

Dr. ORRIN D. CHAPMAN, professor and chairman of the department of microbiology at the college of medicine and director of city laboratory, has arrived in Amman, Jordan, where he will spend two years working with the Public Health Service. He will serve with the Foreign Operations Administration as chief of cooperative health and sanitation in Jordan. There are several WHO programs under way in Jordan, including a new tuberculosis hospital, nursing training program, environmental sanitation programs and a new public health laboratory.

North Dakota

Since September 1, $85,038 in new grants for research and teaching have been received. They include $41,854 from the Public Health Service for research in the departments of anatomy, pharmacology, physiology and physical diagnosis. Other sources were the National Fund for Medical Education, the United States Atomic Energy Commission, the Lipotropic Research Fund, American Cyanamid, the National Foundation for Infantile Paralysis and the Brenner Foundation.

Bids totaling $129,496 for laboratory equipment have been accepted for the departments of biochemistry, pharmacology and pathology for the new $690,000 medical science building addition which was completed in August 1954.

Northwestern

The Samuel Sackett Foundation, established recently for scientific research, has selected as its first project an investigation of rheumatic fever and its related diseases, to be conducted at the medical school.

The research will be supported by income from the $500,000 foundation created by Mr. and Mrs. SAMUEL J. SACKETT of Evanston. The project will be directed by a senior investigator, yet to be appointed, within the department of medicine.

Ohio

Dr. JOHN PRIOR, assistant dean of the college of medicine, was recently named director of postgraduate medical education. This is a new post, established to coordinate all postgraduate medical activities of the health center.

The health center will share in a

$63,510 research grant recently awarded by the Central Ohio Heart Association to carry on local research in the cardiovascular diseases.

Dr. RALPH E. DWORK, assistant professor of preventive medicine, has been named director of the Ohio Department of Health. The appointment is for a five-year term. Dr. Dwork has been acting director since July 1, and prior to that headed the division of communicable diseases.

The newly appointed head of the department of preventive medicine, Dr. WILLIAM F. ASHE, recently returned from India, where he acted as consultant in thermal environmental health, attached to the Technical Cooperation Mission of the Foreign Operations Administration in New Delhi.

Oregon

The Public Health Service has awarded $46,084 to the medical school, to be divided among four research projects. Dr. ROBERT A. ALDRICH, associate professor of pediatrics, will conduct work on purine metabolism in experimental porphyrin. Benign and malignant melanocytes is the title of a project under the supervision of Dr. AARON B. LERNER, associate professor of dermatology. Dr. CARL G. HELLER, associate clinical professor of medicine, was given additional funds to carry on existing research, originally made possible by grants from the Public Health Service.

The National Science Foundation has presented a grant of $27,000 for a study of melanins by Dr. HOWARD S. MASON, associate professor of biochemistry. Another grant of $15,400 was received from the International Minerals and Chemical Corp. for continued study in the departments of biochemistry and psychiatry of the effects of Betayamine on the anxiety-fatigue syndrome.

The Medical Research Foundation of Oregon, for the first time since it was expanded in April, has contributed funds for a research project at the medical school. The study, a joint project of the departments of physiology and obstetrics and gynecology, is designed to determine the state of the normal fetus with regard to its blood gas transport before and after delivery.

Dr. BENJAMIN B. ROSS, instructor in physiology; Dr. WILLIAM HARTMAN, clinical instructor in obstetrics and gynecology and MILES EDWARDS, a student assistant, will conduct the research.

Pennsylvania

Dr. RUSSELL S. BOLES, professor of medicine in the medical school and associate professor of medicine in the graduate school of medicine, is currently doing work as a consultant on a project to determine why the Navajo Indians of Arizona and New Mexico have a near-immunity to cancer.

In his work among the tribesmen Dr. Boles is supported by Dr. HAROLD R. SANDSTEAD, chief nutritionist of the Public Health Service; Dr. NOKA HON, field investigation officer for the National Cancer Institute, and Dr. CLARENCE G. SALSBURY, commissioner of the Arizona State Department of Health.

A new unit has been established under the joint auspices of the university and the Wistar Institute of Anatomy and Biology for the expansion of medical research through the investigation of problems in microbiology and medicine. The new unit, located in the laboratories of the Wistar Institute, is in charge of Dr. GEOFFREY W. RAKE, research professor of microbiology in medicine.

Puerto Rico

The school of medicine has received extension of a cardiovascular training grant from the National Institutes of Health in the amount of $25,000, an equivalent amount from the National Cancer Institute and $12,500 from the National Institute of Mental Health for undergraduate training.

South Dakota

Dr. EARL B. SCOTT, associate pro-

fessor of anatomy, has received a research grant from the Public Health Service for $10,000 to continue his studies on the histopathology of amino acid deficiencies.

Southern California

Dr. PETER V. LEE, formerly instructor in pharmacology at Stanford University School of Medicine, has been appointed assistant dean of the school of medicine.

Dr. Lee will assist Dr. GORDON C. GOODHART, dean of the school of medicine, with administrative affairs. He will also serve as assistant professor of pharmacology and toxicology, and will be a member of the attending staff of the Los Angeles County Hospital.

Toronto

The faculty of medicine recently was host to SIR JAMES LEARMONTH, professor of surgery at the University of Edinburgh. His visit was in his capacity as a Sir Arthur Sims traveling professor.

Western Reserve

The university has received an additional grant of $691,920 from the Commonwealth Fund for further support of the educational program in the school of medicine. The new appropriation will cover a four-year period, through 1958, and brings to $1,413,920 the total which the fund has contributed since 1950.

The school's study of medical education and revision of the medical student curriculum is being carried out by the general faculty through the committee on medical education, of which Dr. T. HALE HAM is chairman. Administration of the integrated teaching program is being directed by JOHN W. PATTERSON, associate dean for medical education and associate professor of anatomy.

Wisconsin

The 30th anniversary of the opening of the State of Wisconsin General Hospital and the establishment of the four-year medical school program was celebrated recently.

The ceremonies included the presentation of an oil painting of Dr. ROBIN CARL BUERKI, first superintendent of the hospital, to the university. The anniversary celebration was held simultaneously with the annual fall preceptor program.

Woman's Medical

Dr. UMON FUKUYAMA, professor of anatomy at Fukushima Medical College, Japan, was a recent visitor to the department of anatomy.

LEDERLE AWARDS

The closing date for nominations for the Lederle Medical Faculty Awards to be made during the academic year 1955-56 is February 1, 1955. Nominations are to be received from deans of medical schools or, with their approval, from the heads of preclinical departments of medical schools in the United States and Canada. Nominations should be addressed to the office of the secretary, Committee for Lederle Medical Faculty Awards, Pearl River, N. Y.

Audiovisual News

A Visual Education Department in the Medical School

THOMAS S. JONES AND J. EDWIN FOSTER

ALTHOUGH DEPARTMENTS of visual education* have existed in a large percentage of American universities, colleges and even high schools for some time, medical colleges have been slow to recognize their importance. In some ways this is strange because modern medical education, more than any other field, requires a wider use of audiovisual teaching media and the technical service associated with their use. Progress is being made, however. The advantages and the practicability of a comprehensive visual education service is becoming more apparent. One by one medical schools are taking the initial steps towards its realization.

The concept of a centralized visual education service is not new. In fact it already exists in evolutionary form in about 35 per cent of American medical colleges and in some of the medical schools of Canada and Great Britain. The degree to which the service is developed to supply a broad visual education function varies widely in different institutions. In most cases it exists as a unified department of illustration with the limited function of supplying a photographic and medical drawing service. With two or three possible exceptions, it would appear that in no case has the function of these departments reached the logical development which present trends indicate will be standard practice in medical schools in the not too distant future.

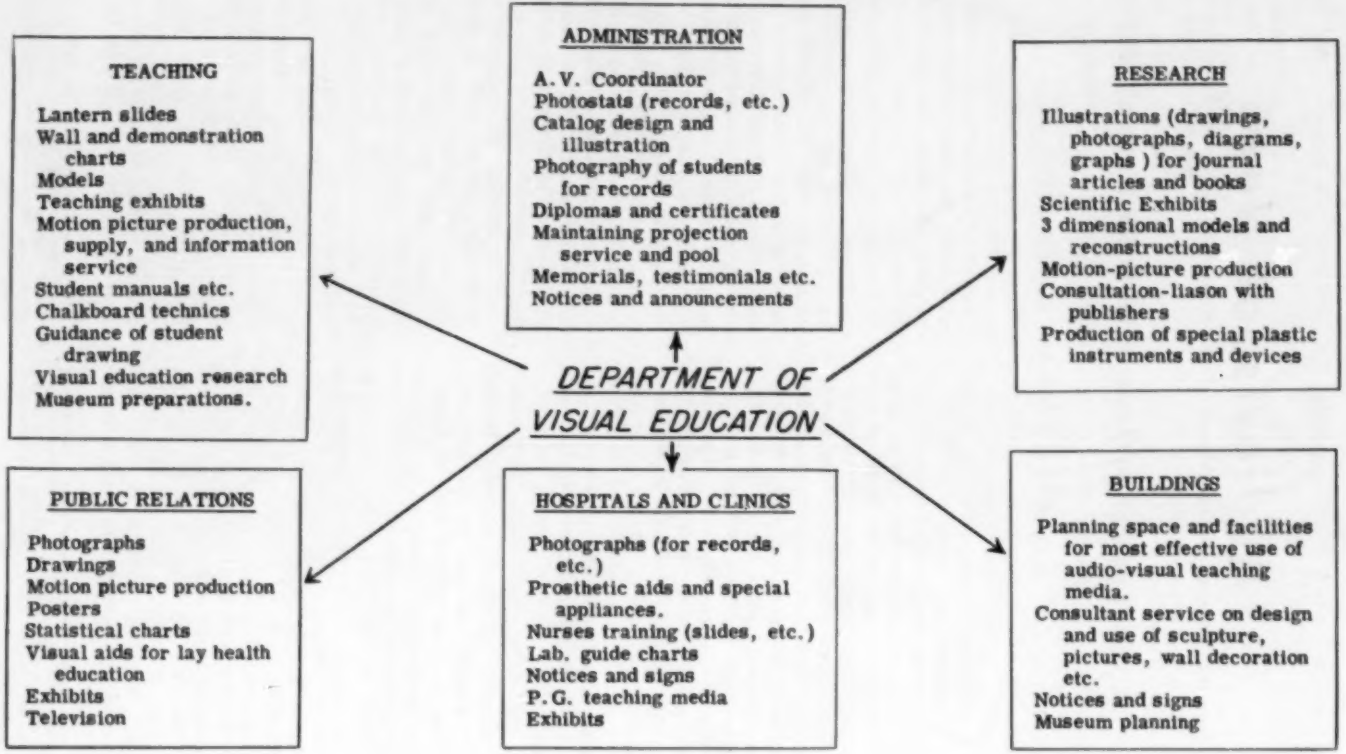
The idea of combining in one department all illustration services was put in effect at the University of Illinois in 1926. Since then some 30 other medical schools have unified and developed these services in varying degrees. It is significant that in schools where this practice has been followed the longest (such as Illinois, Southwestern, Duke and Louisiana State) these departments have grown and have widened their function until they now provide many additional related services which are required in their respective institutions. One may assume that they are well on the way to supplying a comprehensive service such as shown on the accompanying chart. The chart suggests the functions of a department of visual education fully integrated with the teaching, research and administrative machinery of a modern medical school.

As medical education becomes more complex and as the need increases to teach more people more effectively and more quickly, the advantage of a department of visual education becomes more apparent. The communication of knowledge and ideas has become an art—probably the greatest of all arts. Its prac-

Mr. Jones is professor emeritus of medical and dental illustration, University of Illinois, and consulting member of the Committee on Audiovisual Education of the AAMC. Mr. Foster is director of the Medical Audio-Visual Institute.

*This department may be called any one of a number of names such as "audio-visual center" or "communication bureau," depending on the concept pertaining in any particular medical school.

Functions of a Department of Visual Education



tice in the field of medicine makes exacting demands on the teacher. It involves new concepts, technique, facilities and materials. The already hard-pressed teacher cannot be expected to either supply these materials or to have the technical knowledge associated with their production and use. He needs help and counsel which can only be provided by those trained to supply it.

Behind the teacher and available to him at all times should be a department or center to which he can turn for the following services:

1. Providing the routine graphic media he needs to make his teaching effective. (Lantern slides, diagrams, charts, models and teaching exhibits, etc.)

2. Information on motion pictures, current and otherwise. Their suitability to his purpose, opportunity to preview them, etc. Information on new developments in other nonschool produced audiovisual media. (At present this is the general function of the AV coordinator who acts as liaison between the college and the Medical Audio-Visual Institute.)

3. Responsibility for the variety of projectors and screens used in classrooms and for their proper use.

4. Technical advice and cooperation in the development of special visual teaching media as needed.

5. Designing and supplying material for lay and closed circuit television programs (illustrations, diagrams, models, charts, special materials, etc.)

6. Illustrations for student manuals and course outlines.

7. Information and counseling on capacities and limitations of audiovisual media to meet specific teaching situations.

The functions of the department of visual education have been divided into six divisions on the accompanying chart. Administrators, research workers and those who have responsibilities other than teaching frequently need the graphic services which can only be provided by people trained to provide them. Having these services available is an asset to the school in more ways than one. It not only saves time and contributes to more efficient operation, but it stimulates the undertaking of projects which would not be possible without the facilities and cooperation which the visual education department provides. It has frequently been commented on, for instance, that the availability of these facilities encourages certain types of research activities. The effectiveness of journal articles and other publications, scientific and otherwise, can sometimes depend upon the quality of their illustrations.

Other functions of a department of visual education are indicated on the chart. Only one of these needs comment here. It is the function of planning space and facilities for most effective use of audiovisual teaching materials. This neglected area of responsibility in most medical schools could be one of the most important functions of a visual education department. It concerns the design and maintenance of the physical facilities in classrooms, corridors and museums for maximum teaching effectiveness.

In summary, the visual education department serves the varied audiovisual needs of people within the medical school. Its justifications are *service*, both technical and educational, and *economy*, both financial and instructional. The existence is warranted if it helps people do a better job with greater efficiency.

Role of the AV Coordinator

The title of "audiovisual coordinator" was first used in the *Directory* of the Association of American Medical Colleges in 1952. It denoted a specially appointed person on the medical school staff who maintained liaison between his medical school and the Medical Audio-Visual Institute. This AV coordinator has received newspouches, preview circuit

The second part of this discussion will appear in the February issue and will concern the personnel, organization and administration of a department of visual education.

programs and general information from the MAVI. This material and information has been disseminated or used by the AV coordinator in various ways for the general improvement of instruction throughout the medical school.

Such liaison with the Medical Audio-Visual Institute is a means to an end. The goal is the improvement of instruction in the medical school through the better use of audiovisual materials. The coordinator's relationship with MAVI becomes incidental to his responsibility toward the school. Indeed, the appointed AV coordinator is usually the person who is, by vocation or special interest, most responsible for some important aspect of existing AV services within the school.

The audiovisual needs of the medical school vary widely from school to school. The professional resources vary just as widely so that a standard list of qualifications of the AV coordinator is neither practical nor desirable. However, certain benchmarks or goals are needed if there is to be progress. These goals must be set up and achieved by the individual school with what assistance can be gleaned from the experiences of other medical schools.

Certain general qualities of the AV coordinator may be expected. The AV coordinator appreciates teaching as a craft as well as an art and respects the teacher's role in blending all means of communication with his own personality. The AV coordinator is interested in, and familiar with, the strengths and weaknesses of various kinds of materials, and recognizes that teachers are anxious to improve their art by accepting services and advice properly given. In short, the AV coordinator is convinced that special consideration given to the procurement and use of AV materials will result in more efficient teaching.

The total range of AV materials is great and the skills required for the production or procurement and utilization of them are varied. The detailed attention the coordinator gives to any one phase is dependent on the resources and activities of established departments such as medical illustration, photography, television and, in some cases, the library. If a complete range of such departments exists and all AV functions within the school are covered, the coordinator may assume his role to be limited to that of acting as liaison between the Medical Audio-Visual Institute and the various departments having AV functions, although he may be administratively responsible for only one, if any, of such departments. He may, however, be responsible for a coordinated total AV program within the school, in which case he will direct the visual education department or the audiovisual center activities.

In summary, the AV coordinator has accepted the challenge of helping the school use AV materials as a means of enhancing the lecture, the textbook, the laboratory and the clinic and not as a substitute for these proven methods of instruction. The exact means whereby he does this will vary from school to school until experiment and more common experience suggest common standards. In view of the increasing interest in teaching methods and materials, the AV coordinator's role is likely to be one of increasing importance.—J.E.F.

Directory of Illustrators

The 1954 *Membership Directory* of the Association of Medical Illustrators is now available to the scientific and allied fields. Biographical sketches of all members and the institutions represented by active members are given. The price is $1 per copy. Orders should be sent to the medical art department, Massachusetts General Hospital, 30 Fruit St., Boston 14, Mass.

Medical Films Catalogued

Eleven hundred medical films have now been catalogued by the Library

of Congress. This announcement was made by Richard Angell, acting chief of the descriptive card division of the Library of Congress, at the Audio-Visual Conference of Medical and Allied Sciences held at Chicago in August. Although there were only 22 subscription orders at that time, Mr. Angell indicated that the forecast for the use of L.C. cards by medical groups appears to be very favorable.

Making 16mm. Magnetic Sound

More faculty members are considering making their own magnetic sound tracks on films. The following pointers, gleaned from the September issue of *Pioneer Tracks*, the Bell and Howell publication, may be helpful to the initiate.

Processing. When sending a single perforated film for processing, prior to having a magnetic stripe placed on it, mark the package PIX ONLY. It does not require the special processing of an optical track.

Amount of Narration. When preparing the script for the narration allow about 2.2 words per second of film running time; a 10-second scene takes about 22 words. Ten seconds represents four feet of film if it was taken at silent speed (16 frames per second), or six feet of film taken at optical sound speed (24 frames per second).

Sound Quality. Keep the microphone as far from the projector as possible and place it on a table or stand to avoid hand crackle. The mouth of the narrator should be about 10″ away from and on a level with the microphone. If the narrator has difficulty with the sibilants it would be well to talk across the microphone.

Summaries of Film Reviews

Sucking Wounds of the Chest

15 min., sd., color, 16 mm., 1953.

After scenes of Korean combat, a soldier simulates a penetrating left lower thoracic sucking bullet wound without exit. Diagrams show the simple anatomy and physiology of respiration, the role of the mediastinum and the effect of a hole in the chest. The five steps of first aid for sucking wounds of the chest are listed, then are demonstrated one by one on the "patient": 1. speedy and accurate diagnosis, with diagrams to show possibilities; 2. stop the leak, by air-tight bandage; 3. turn patient on injured side, to assist the good lung; 4. treat for shock, by covering with blanket, and plasma administration; and 5. prepare for immediate evacuation by proper tagging and stretcher carriage. The patient handling is summarized.

This straightforward, simple teaching film presents a reenacted battle wound and its handling by a medical corpsman, illustrating a simple rationale for each procedural step. Although the film is obviously staged, and there are some possible criticisms of content and presentation, on the whole this is a sound didactic presentation, efficient in transmitting elementary facts and procedures.

For medical corpsmen and first aid groups, the film will successfully impart its five-point message. *D.S.R. for MEND Program, April 1954.*

Audience: Medical corpsmen, first aid personnel.

Production Data: Sponsor: Bureau of Medicine and Surgery, U. S. Navy Department; **Producer:** Naval Photographic Center, Anacostia, Md.

Distribution: Chief, AV Training Aids Section, Bureau of Medicine & Surgery, U. S. Navy Department, 21st & E. Sts. N.W., Washington, D. C., **Loan:** (use Code No. MN-7477.)

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TAYLOR INSTRUMENTS MEAN ACCURACY FIRST

Book Reviews

First World Conference on Medical Education

Held under the auspices of the World Medical Association. **Hugh Clegg**, editor. Geoffrey Cumberlege, Oxford University Press, London, 1954. 759 pp. $16.

The First World Conference on Medical Education, sponsored by the World Medical Association, was held in London in August 1953. The published proceedings of that conference contain over 80 papers and addresses with concluding reports on the four sections into which the conference was divided.

Several of the opening addresses have already been reprinted in the Journal of MEDICAL EDUCATION and the philosophy of the "first-rate," as developed by Sir Richard Livingstone, has become a frequent topic for discussion by admissions and curriculum committees.

The proceedings are presented in four sections which represent the actual organization of the conference: requirements for entry into medical schools; aims and content of the medical curriculum; techniques and methods of medical education, and preventive and social medicine.

The number of excellent papers in these proceedings makes it unwise and indeed impossible to single out specific papers for comment.

As the reader peruses the proceedings, he is impressed with the fact that there are many aspects of medical education which are of truly global concern today. Premedical education methods of student selection, integration, the role of preventive medicine, and relationships between teacher and student are under study in all world areas. A forum which offers medical educators an opportunity to present specific educational methods has very real value. Thus, the proceedings of this First World Conference on Medical Education represent a valuable reference source for information on specific problems in the field, as well as a timely documentation of medical education today.

John Z. Bowers, *Utah*

Fundamentals of Internal Medicine, 4th edition

Wallace M. Yater, M.D. Appleton-Century-Crofts, Inc., New York, 1954. 1276 pp. with index. $13.50.

In the fourth edition, Dr. Yater and collaborators have brought up-to-date this established medical text. New material has been added without sacrificing Dr. Yater's original aim of brevity.

The format has been changed and generally improved. There are now 1,240 pages of text and illustrations, 147 fewer than in the preceding edition. An earlier device of using bold print to emphasize important points has been abandoned.

Dr. Yater has succeeded admirably in accomplishing the purpose set down in the preface, namely, to present the fundamentals of internal medicine in a simple, concise and comprehensive form. For instance, diseases of allergy are adequately covered in nine pages. The book enjoys the advantages of essentially single authorship in its major sections. A high degree of integration and continuity is thereby obtained and fragmentation and needless repetition avoided.

In striving for simplicity and brevity the author runs the risk of dogmatism and superficiality. For the most part, Dr. Yater and his collaborators have avoided these faults.

The current edition retains sections not ordinarily found in current textbooks of internal medicine. Sections on otolaryngology, ophthalmology and dermatology are written by specialists to meet the needs of the internist and general practitioner. There also are sections devoted to dietetics, symptomatic and supportive treatment, antimicrobial therapy and inhalation therapy. A special feature is the final chapter which Dr. Yater has carried over from the first edition, "The Physician Himself."

One can find grounds for disagreement with the author on some details. He speaks of rheumatic carditis as "infection" of the heart, and of orthopnea

Announcing a Timely New Text

THE LUNG

Clinical Physiology and Pulmonary Function Tests

By Julius H. Comroe, Jr., Robert E. Forster, Arthur B. DuBois, William A. Briscoe, Elizabeth Carlsen

Department of Physiology, Graduate School of Medicine, University of Pennsylvania

160 Pages; Illustrated

This book describes today's knowledge of clinical physiology of the lung and the application of pulmonary function tests to physiological diagnosis, evaluation of therapeutic procedures, preoperative evaluation of pulmonary function and estimation of pulmonary disability.

The book is organized into three main divisions. *Part I* deals with essential physiological data. *Part II* is devoted to illustrative case histories, including the problem posed by specific patients, the results of individual pulmonary function tests, the interpretation of these results and application to management and prognosis. *Part III*, the Appendix, presents standards for pulmonary function tests, and the mathematics and physical laws relevant to the study of pulmonary function.

Many excellent illustrations are included, contributing greatly to the teaching quality of the book. Numerous tables, including those of normal values, and a list of abbreviations add to the completeness of presentation.

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DM is the new series of monthly monographs on current medical problems. Each monthly monograph is a 30-40 page pocket-size discussion of some disease or clinical problem of particular importance, written by a recognized authority. For example: Heart Failure *(Stead & Hickam)*, Hepatitis *(Shank)*, Renal Failure *(Strauss)*, Thyrotoxicosis *(Rawson)*, etc. Many educators already are recommending DM to their students. Ask to see a copy if you have not yet done so. Regular subscription rate $9.00 a year; special student-intern rate $6.00 a year. Permanent type binder, $1.25, postpaid.

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as dyspnea at rest. In discussing treatment he is sometimes highly arbitrary. In giving the indications for surgical intervention in duodenal ulcer which persists on medical management, he specifies a period of observation of two years after which surgical treatment must be considered.

The problem of nomenclature of drugs is dealt with effectively. Chemical and official names are emphasized, but popular trade preparations are freely mentioned and properly identified.

This text will be especially welcomed by the third-year medical student who is overwhelmed by more exhaustive works in the field.

Lucien A. Gregg, *Pittsburgh*

Proceedings of the First International Congress on Medical Librarianship

Edited by **F. N. L. Poynter.** Einer Munksgaard, Copenhagen, 1954. 451 pp.

This volume, which was fittingly published as Volume Three of *Libri*, the international library review, is visible evidence of a meeting which marked a long step ahead in international library cooperation. At frequent intervals the statement was reiterated that since librarians are keys to the accumulated knowledge stored in libraries, and thus are making their contributions to scientific (specifically medical) research and development, they need not belittle their role.

Through all the papers and discussions reported there runs the objective of answering the question, "How can we be more helpful to the people who use our libraries?" This is not an unusual objective, but with over 300 representatives from 36 countries in attendance at the meeting, the possibilities for the exchange of ideas—and material—were almost limitless. Mr. Poynter, the editor, has done a magnificent job of giving the people who did not attend the meeting not only an accurate transcript of the papers, but the jist of the discussions which followed them (sometimes as interesting as the papers themselves), and notes of the social affairs which were sandwiched between the formal sessions. Those who did attend will be grateful to him for providing an account which will refresh their memories.

There is a complete chronological recording of the sessions, from the president's address to the election of a committee to consider all methods of promoting further international cooperation. All papers are published in the language in which they were given—French or English.

It is impossible to list the papers given, but the headings under which they were grouped will indicate the subjects considered: symposium on the role of the medical librarian in the world today; historial symposium; symposium on classification; symposium on medical libraries of the world; symposium on education and training for medical librarianship; symposium on the centralization of medical library resources; open forum and discussion on international cooperation.

The appendix contains two papers which "being in the form of lists . . . were not included in the congress program but were formally accepted as part of the proceedings." The second of these, "Medical Library Literature, 1950-1952," by Geoffrey R. Pendrill, provides an extremely valuable bibliography of books and periodicals.

These proceedings, with good paper, clear type and interspersed plates, are worthy of being properly bound. The volume could well be placed on the working bookshelf of every professional medical librarian and all people truly interested in the progress of medical librarianship.

Isabelle T. Anderson, *Utah*

Books and Pamphlets Received

(As space permits, those with the greatest interest to our readers will be reviewed)

First World Conference of Medical Education

Held under the auspices of the World Medical Association. **Hugh Clegg,** editor. Geoffrey Cumberlege, Oxford University Press, London, 1954. 759 pp. $16.

The Learner in Education for the Professions

Charlotte Towle. University of Chicago Press, Chicago, 1954. 411 pp. with index. $7.50.

The Skin—A Clinicopathologic Treatise

Arthur C. Allen. M.D.The C. V. Mosby Co., St. Louis, 1954. 1030 pp. with index. $25.

Principles of Biochemistry

Abraham White, Ph.D.; **Philip Handler,** Ph.D.; **Emil L. Smith,** Ph.D. and **DeWitt Stetten Jr.,** M.D. McGraw-Hill Book Co., Inc., New York, 1954. 1062 pp. with index. $15.

Abstracts and Excerpts

Prywes, M. **Medical Education in Israel.** "The New England Journal of Medicine," Vol. 251, No. 15, October 7, 1954.

In 1953 the number of physicians in Israel was 3,717, including 700 women doctors. This number brings the doctor-population ratio in Israel to 1 to 430, which is one of the highest in the world. Eighty per cent of these physicians work in towns—about 2,400 alone in the three main cities of Jerusalem, Haifa and Tel Aviv—so that practically 65 per cent of the doctors are serving 45 per cent of the population.

The 60 members of the faculty of Hadassah Medical School are graduates of about 50 universities from 16 different countries of Europe, the Americas, Asia and Africa. These few figures may serve to demonstrate the extraordinary heterogeneous composition of Israel's medical profession, which may be considered a unique phenomenon.

As a result of the policy of "ingathering of the exiles" the young state, during the first five years of its existence, has seen immigration on an unprecedented scale. Most immigrants come to Israel with no means of their own and many are in need of special care because of poor health or age, or for other reasons. This uncontrolled immigration has few precedents in modern history and its speed and extent greatly affected the medical picture of the country.

About 75 per cent of the population of Israel benefit from health insurance in some form or other, mainly from Kupath Holim (Sick Fund of the Labour Federation), which has a network of hundreds of outpatient clinics and health centers all over the country. Furthermore, there are medical services organized on a community basis, with the encouragement and financial support of the government, such as maternity and child welfare clinics, school health services and outpatient departments for the needy.

Fifty per cent of the doctors are over 50 years old, among them 600 who have already reached the age of 65 and more, and who must be replaced during the next few years. Taking into account that the average number of graduates from the medical school is about 60 each year, it will take 10 years just to provide the replacements needed. Moreover, there is a shortage of specialists in certain fields, especially radiology, anesthesiology, orthopedic and general surgery, ophthalmology and psychiatry. The lack of well-trained public health physicians and of specialists in preventive medicine will certainly make itself felt in the coming years when reorganization and expansion of the existing health service are undertaken.

How was it possible that during a period of political and economic difficulties and in the face of seemingly insurmountable obstacles, all these tasks could be tackled and dealt with fairly successfully during the crucial years after the state of Israel was established? Decades of intensive activities of such pioneering institutions as the Hadassah Medical Organization, the Kupath Holim and the Israel Medical Association prepared the field of curative and preventive medicine. With the establishment of the state, the health ministry and army medical services joined hands, and finally Malben (the medical organization of the American Joint Distribution Committee in Israel) shouldered part of the burden of providing medical aid for new immigrants through the provision of about 4,000 new beds for the disabled and the aged.

The first step toward the establishment of the medical faculty had been taken in 1924, when the American Jewish Physicians Committee endowed an institute of microbiology at the Hebrew University.

A plan for a postgraduate school of medicine in conjunction with the Rothschild-Hadassah Hospital in Jerusalem was first put forward in 1927. The negotiations then begun resulted in 1936 in a formal agreement for the establishment of the University-Hadassah Medical Center on Mount Scopus to comprise three units: the Medical School for

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Bateman—THE SHOULDER and ENVIRONS

A new approach to the problem of diagnosis of shoulder disease is presented in this book. Symptoms in this extensive region fall naturally into three broad groups: shoulder and neck pain, predominate shoulder pain, and shoulder plus radiating symptoms. This grouping is followed to separate disorders of the region as a whole, the individual lesion is then discussed in detail including the pathology, clinical course, and treatment. The techniques of the common operations about the shoulder are illustrated in detail. By JAMES E. BATEMAN, Toronto, Canada. 568 pages, 418 illustrations. Price, $16.25.

Barber—EMBRYOLOGY of the HUMAN EYE

The purpose of this book is to present in brief and simple form the phases of human embryology that are of particular interest to students of ophthalmology. Every effort has been made to present the development of the human eye, not as a series of sharply marked off stages, but as a fast-moving story of numerous events with emphasis on their concomitant sequence and significance. By ALETA NICHOLS BARBER, New Orleans, La. 250 pages, 193 illustrations. Price, $8.75.

Allen—THE SKIN

This book is an attempt to further the unification of the teaching and thinking concerning mechanisms of disease in which the skin is involved. Although intended for dermatologists as well as the great many other physicians who encounter skin disorders in their practice, there nonetheless is included foremost among the author's aims a desire to interest his fellow pathologists in the field of cutaneous diseases, thereby enhancing their usefulness to dermatologists and other clinicians and hence to patients. By ARTHUR C. ALLEN, New York City. 1050 pages, 495 full-page illustrations. Price, $25.00.

Cleckley—THE MASK of SANITY

The chief aim of this book is to bring before psychiatrists a few of the psychopath cases, typical of hundreds more, which have proved so difficult to interpret by the customary standards of psychiatry, and all but impossible to deal with or to treat satisfactorily in the face of prevalent medicolegal viewpoints. By HERVEY CLECKLEY, Augusta, Ga. 596 pages. Price, $9.50.

Dimond—ELECTROCARDIOGRAPHY

This book might well be labeled "Black-board Electrocardiography" for it is the outgrowth of five years of classroom teaching. Written solely for the student and the general practitioner with the intent of carrying such an audience from a total uninitiated stage to a fairly sophisticated level. By E. GREY DIMOND, Kansas City, Kansas. 261 pages, 272 illustrations. Price, $14.00.

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Postgraduate Study and Research, the Rothschild-Hadassah University Hospital and the Hadassah School of Nursing.

On the completion of the medical center in 1939 the pre-faculty of medicine was organized, uniting the medical research laboratories of the university and various clinical departments of Hadassah. This was replaced by the medical faculty in 1949, when the medical school was opened.

In May 1949, the medical school was opened and undergraduate medical teaching was initiated with the opening of the second preclinical year (fourth year of studies). During the following years the curriculum was expanded and since the academic year 1952-53 a full six-year course has been available. At present about 450 students, 17 per cent of them women, from 18 different countries are enrolled in the seven-year course (including the internship).

Dartmouth Television Committee. **A Faculty Committee Looks at Educational Television.** "The Educational Record," Vol. 35, No. 4, October 1954.

This is a condensed version of a report of the Dartmouth Television Committee presented to the president of Dartmouth College. It is the result of considerable study of the question of educational television. The seven-man committee met 40 times for some 120 hours of deliberation besides attending TV meetings, conferring with TV representatives and visiting educational and commercial TV stations.

While costs are carefully studied, the important contributions of the committee are its analysis of the curricular and extracurricular uses of television. It is held that the case for classroom use of TV is speculative, but more confidence is expressed in the values of TV "as a buttress to the classroom in much the same way that the resources of the college library are used."

The extracurricular uses of television are considered in terms of both the college and the college neighborhood. Such programing would be directed toward the task of imparting information as well as toward the improvement of tastes and cultural sensitivities.

The committee does not recommend closed circuit television as a final goal of the college nor does it believe that the college can rely on a commercial station or stations to become an instrument for assisting the college in performing its primary task of educating its undergraduates. This report would be of value to those considering the possibilities of a university or college television station serving the university or college as a whole.—J. E. F.

The Personnel Exchange

Faculty Vacancies

• OPHTHALMOLOGIST: Full-time teaching and research faculty appointment. Excellent research and clinical facilities. Rank and salary depend upon qualifications. Address: V-19.

• CLINICAL ISOTOPE RESEARCH: Internist or other qualified physician desiring career in research and teaching. Staff position with unusual opportunities to use isotope techniques. Clinical and laboratory facilities for independent and group research. University affiliation. Address: Dr. Marshall Brucer, Oak Ridge Institute of Nuclear Studies, Box 117, Oak Ridge, Tenn.

• TOXICOLOGIST OR PHARMACOLOGIST: Graduate school of public health in large university has a staff opening for a toxicologist or pharmacologist. Department with a broad interest in a new, expanding field of industrial chemicals is seeking a person to carry on toxicological studies and offers opportunity for fundamental research on mechanisms of toxicity. Recent graduates considered. Some graduate teaching if desired. Address: Box V-24.

• The department of medicine of an Eastern medical school anticipates a temporary vacancy in its subdepartment of endocrinology and metabolic disease in July 1955, while one of the faculty completes his armed service requirements. It is interested in securing a highly qualified man to fill this vacancy during the one or two years leave of absence of the incumbent.

Unfortunately no commitments can be made at this time regarding occupancy of a faculty appointment when the present incumbent returns. Salary, job description and other details will be discussed with any qualified and experienced physician and teacher who inquires about the temporary vacancy. Address: V-23.

• FELLOWSHIPS IN NEUROLOGY are available in the University of Buffalo School of Medicine. Facilities for training in basic neurology, neurophysiology, child neurology. $3,000 yearly. Write Stockton Kimball, M.D., dean, University of Buffalo School of Medicine, Buffalo 14, N. Y.

• PHYSIATRIST: To head new department of physiatry and rehabilitation, University of Nebraska College of Medicine at Omaha. Basic guarantee plus consultation privileges. Address: H. B. Hunt, M.D., University of Nebraska hospital, Omaha 8, Neb.

• RESEARCH FELLOW IN METABOLISM: Newly formed metabolic section of research institute desires young, relatively untrained clinical investigator. Department is oriented toward water and electrolyte metabolism and nutritional problems. Facilities include plans for metabolic balance study unit, animals, laboratories, university teaching association, strong basic science departments. Intramural stipend. Address: V-25.

• PHARMACOLOGIST: The Creighton University School of Medicine has an opening for an instructor in the department of physiology and pharmacology. Ph.D. or M.D. degree required, with some training and teaching experience in the field of pharmacology preferred. Teaching duties begin Feb. 1, 1955, with about one half time available for research. Position available immediately. Address: Dr. J. Raymond Johnson, Director, Dept. of Physiology and Pharmacology, Creighton University School of Medicine, Omaha 2, Neb.

• PHYSIOLOGIST: The department of physiology of the University of Texas Medical branch has an opening for an instructor or an assistant professor to take charge of the teaching of neurophysiology. Requirements are M.D. or Ph.D. with training and research experience in the field. About one-half of the year will be available for research on problems of the candidate's choice. Address: M. Mason Guest, department of physiology, University of Texas Medical branch, Galveston, Tex.

• MICROBIOLOGY: Faculty position available in Eastern medical school with time and facilities for research in new laboratories. Rank and salary depend on experience and training. Address: V-26.

• PEDIATRICIAN: Foreign assignment; Far East; two year contract; research work on A-bomb survivors; opportunity for individual research; excellent facilities for great variety of investigations; clinical departments supported by well equipped laboratories and radiological service; staff of 20 physicians; requires mature and experienced specialist. Woodward Medical Personnel Bureau, 185 N. Wabash Ave. Chicago.

• Residencies in internal medicine available immediately and July 1, in new hospital for neoplastic diseases. Active investigative programs in chemotherapy, metabolism and hematology. Strong basic science departments. Affiliation with medical school; teach medical students. Salary $3300--3800. New York state: Address: V-27.

• Department of Pathology, University of

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Information for these columns should reach the Personnel Exchange Editor, 185 N. Wabash Ave., Chicago 1, Ill., not later than the 10th of the month which precedes the month in which the listings will appear.

Texas M.D. Anderson hospital and tumor institute, has openings for two or three senior pathologists from assistant to an associate level. Half of the individual's time can be spent on research and investigative work, the balance taken up with the usual service responsibility connected with a university teaching hospital. Address: William O. Russell, M.D., Pathologist-in-chief.

Personnel Available

• PHYSIOLOGIST—MICROBIOLOGIST: Man, Ph.D., 30, veteran. 7 years experience in teaching physiology, microbiology and histology, medical school level. Member of scientific societies. Desires teaching fellowship with opportunity to work for M.D. in return for tuition and stipend. Prefer Canada or U. S. Goal—radiology. Available in fall. Address A-113.

• PHARMACOLOGIST-PHYSIOLOGIST: M.S., Zoology; Ph.D. expected June 1954. Experienced in pharmaceutical research, teaching experience in pharmacy during army service. Desires research and teaching position in physiology and pharmacology. Special interest in endocrinology. Member scientific societies, Sigma Xi. Publications; references. Address: A-114.

• M.D., M.P.H.; Diplomate of Board of Public Health and Preventive Medicine desires to head department of PUBLIC HEALTH and PREVENTIVE MEDICINE in medical school. 14 years varied experience in field combined with teaching at undergraduate and graduate levels. Capable of integrating this subject with rest of medical school curriculum. Address: A-115.

• PHYSIOLOGIST-ENDOCRINOLOGIST: Man, 31, Ph.D. 5 years experience in teaching and research at Harvard University. Seeking full-time academic position. Extensive experience in physiology, general endocrinology, endocrinology of reproduction, human heredity, research methodology, histology and zoological sciences. Will accept administrative duties and responsibilities. Salary secondary to good future. Address A-117.

• HISTOLOGIST-HISTOCHEMIST: Ph.D. Harvard; young man, teaching and research experience. Publications; member of scientific organizations. Interested in obtaining teaching or research position in eastern U. S. Address: A-118.

• LABORATORY SUPERVISOR: Administrative and/or teaching position in medical technology. 10 years supervisory experience. B.S. in bacteriology. Graduate credits in biochemistry, histology and pathology. Laboratory officer, Sanitary Corps, Medical Department, U. S. Army 4 years (captain). Publications; references. Seeks stimulating position, preferably with academic affiliation. Address: A-119.

• SURGEON: 32; American Board of Surgery certified. Married. Interested in academic career; category 4; prefer job with limited private practice privileges, but will consider any full-time position without private practice allowances. Address: A-120.

• BACTERIOLOGIST: Male, 39, M.Sc., married. 5 years teaching experience in medical bacteriology and general microbiology. 12 years practical and administrative experience in public health laboratories. Desires teaching position with research opportunities or administrative positon in public health laboratory. Presently assistant professor of bacteriology. Available autumn 1954. Address: A-123.

• BIOCHEMIST-RADIOCHEMIST: Ph.D., 1952. Major in physical chemistry, minor in biochemistry. Experience in sterols, organic reacton mechanisms, small animal metabolism and radiocarbon dating. Presently engaged in research on mineral metabolism in man. Publications. Desires teaching or research position in applications of isotopes or physical chemistry to medical problems. Address: A-124.

• INTERNIST: M.D., practicing physician, consultant in medicine and endrocrinology, interested in university position developing research study to determine the potential of measuring taste as it adapts to and reflects immediate physiologic and nutritional needs. Hospital and medical school teaching experience. Certified Am. Bd. of Internal Medicine; Am. Coll. Physicians. Address: A-125.

• BIOCHEMIST: Biochemistry-Internal medicine Ph.D., M.D., 40. Interested in medical school appointment for teaching and research. Experience in teaching, research and private practice. Particularly interested in clinical correlation of basic sciences. Address: A-126.

• PHYSIOLOGIST: Ph.D., male, 37, family. Experience in research and teaching mammalian physiology. Research emphasis in neurophysiology and visual physiology. Experienced in using electrophysiological techniques. Acquainted with problems and techniques of electromyography, especially as applied to human studies. Publications. References. Desires opportunity for research with or without teaching responsibilities. Available. Address: A-127.

• PHYSIOLOGIST: Ph.D., 35, married. Presently associate professor of medical physiology in large medical school. Fifteen years experience in teaching and research, the last seven in medical schools. Many publications in fields of nutrition, respiration, endocrinology, steroids, radioisotopes. Experienced in organization, administration, teaching. Considerable clinical experience. Will consider any location. Salary above $7000. Address: A-129.

• PHYSIOLOGIST: M.D., Ph.D., 35, family. Training requirements for boards in internal medicine completed. Teaching and research experience. Army service will be terminated end of 1954. Desires full-time academic posi-

tion where basic science and clinical interests in teaching and research may be fulfilled. Address: A-128.

• PHYSIOLOGIST: Ph.D., 38, broad biological training. Wide experience in teaching and research. Desires teaching position in Chicago area with opportunity for research. Available September 1. Interest and experience in connective tissue permeability and biological effects of x-rays. Married. Address: A-130.

• PHYSICAL CHEMIST—BIOCHEMIST: Woman, single, 30. Ph.D., 1949. Major in physical chemistry, minor in biochemistry. Two years experience in clinical research on total body water and kinetics of water transfer. Desires teaching with some research. Publications, references. Address: A-131.

• ANATOMIST: 39, married, Ph.D. Specialty in neuroanatomy. Competent in human gross anatomy and histology. Two years completed in medical school. At present associate professor in medical school. Nine years teaching experience in medical school. Have had full charge of course in medical neuroanatomy. Research primarily in neurocytology and gross anatomy. Major advisor on graduate work was very eminent neuroanatomist. Minor work was in neuropathology. Prefer to remain in teaching and research in a medical school. Address: A-132.

• ANATOMIST: Ph.D., 27, married. Desires permanent teaching-research position in medical school. Thoroughly trained in all phases of anatomy, especially neuroanatomy with minor field in pathology. Four years' teaching experience in gross anatomy and neuroanatomy. Extensive research experience including publications. Member Sigma Xi. References. Address: A-134.

• THORACIC AND GENERAL SURGEON, 48, Certified by board in surgery and in thoracic surgery. Member of numerous national societies and author of many scientific publications. Has served as chief of the surgical service in large teaching hospitals. Long experience in teaching and training programs; some in research. Desires teaching appointment in class A medical school, preferably full time. Primary interest in thoracic surgery. Address A-135.

• BIOCHEMIST: Ph.D., presently holds teaching and research position in a medical school. Desires position with teaching and research responsibilities. Address: A-137.

• PUBLIC RELATIONS DIRECTOR: 20 years experience in handling a variety of business and college public relations, specialist in interpreting scientific and technical topics, interested in connection with medical school or medical foundation where his energies and talents might be concentrated to better advantage. Address: A-139.

• PEDIATRICIAN: Board eligible. Three years clinical training in Eastern university centers. Some research experience. Desires academic position allowing part time practice. Small medical school preferred. Address: A-140.

• BASIC RESEARCH: Man, 39, veteran. Ph.D. Chemistry. M.D. June 1955. Experienced in teaching graduate and medical biochemistry, organic synthesis, tracer work, intermediary metabolism and medical therapy using radioactive isotopes. Publications. Address: A-141.

• RADIOLOGIST: Academic post with practice privileges desired. Broad experience in administration and teaching. Special interest in radiation and radioisotope therapy. Address: A-142.

• ANATOMIST: Age 33, minor in physiology, requirements for Ph.D. completed except for some thesis work. Interested in teaching gross anatomy of physiology with time for research. Experience: assistant professor of biology, research in mammalian wecology, endocrinology, and circulation. Publications. Address: A-143.

• SURGERY: Residency for one year in general surgery sought by immigrant in Louisville, Ky. Married to an American. Internship expired Nov. 1954. Available Jan. 1, 1955. Prefer Louisville or vicinity. Address: A-144.

• BACTERIOLOGIST: Male, Ph. D., Harvard. Extensive teaching and research experience in medical bacteriology, general microbiology and applied immunology. Direct research: immunizing agents for bacterial and viral diseases; chemotherapy of virus infections, tuberculosis and malignancies; blood plasma fractionation and plasma volume expanders.

Closely associated with clinical evaluation of new chemotherapeutic agents, drugs and diagnostic aids. Member Sigma Xi and other scientific societies. Publications. Desires permanent teaching and/or research position, with or without administrative responsibilities. Address: A-145.

• BIOCHEMIST: M.D., Ph.D. Married, veteran. Sixteen years extensive experience in clinical biochemistry, research in biochemistry and endocrinology and in teaching. Publications. Extensive experience in medical editorial work.

Listed in American Men of Science and Who's Who in Medicine. Excellent references. Bogged down by administrative work and poor financial return. Wishes changes and desires teaching and/or hospital laboratory position with opportunities for research. Will consider editorial offers. Address: A-146.

• PHYSIOLOGIST: Ph.D. Now assistant professor Midwest medical school. Board training physiology and physics. Fellowships. Teaching experience in medical and dental physiology, graduate biophysics. Active research on circulation in perfused organs under own grant; and aid in group studies in environmental stress. Extended experience in aviation physiology and applied physics, including many designs. Desires position in East with active teaching assignments, independence of research, chance to develop biophysics program for medical and graduate curriculum. Available Spring 1955. Address A-147.

• Physiologist: 30, family. Ph.D. June 1955. Research and teaching experience. Publications. Knowledge of biochemistry. Medical and zoological background in general and in mammalian physiology. Desires research opportunity with or without teaching. Special interests in cell metabolism and atherogenesis. Address: A-148.

• Pharmacologist-Physiologist: 31, veteran. Ph.D. Physiology and pharmacology, M.D. June 1955. Experienced in teaching pharmacology in university medical school. Broad training in classic mammalian pharmacologic techniques and biochemical procedures as they apply to determination of the mode of action of drugs. Desires teaching position with research opportunities. Will accept administrative duties. Publications, references. Address: A-149.

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